Vol. 925 Number 2

OFFICIAL GAZETTE

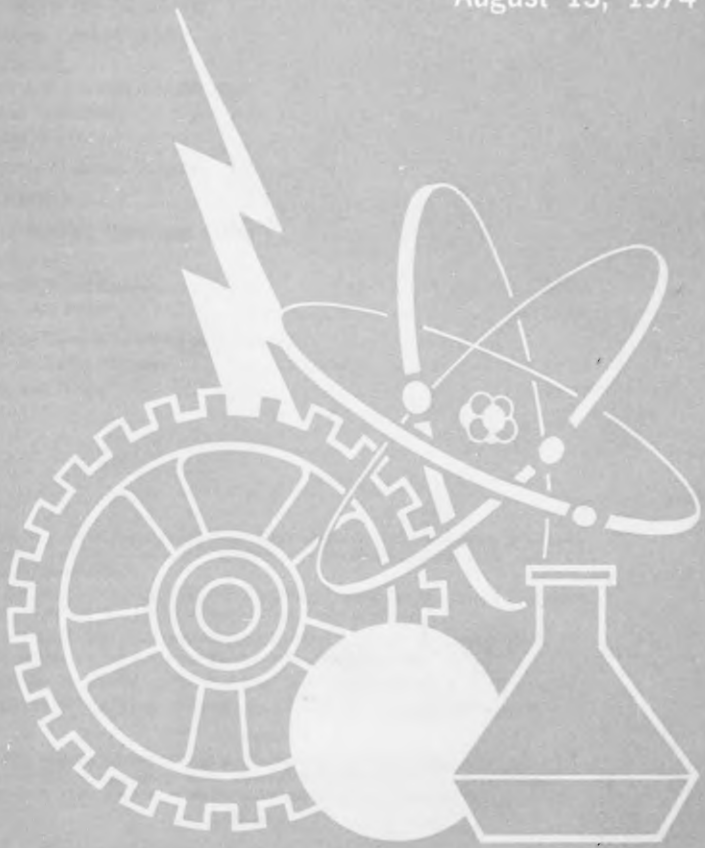
of the

UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

August 13, 1974



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 13, 1974 Volume 925 Number 2

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PATENT OFFICE NOTICES

Reinstatement

Donal E. McCarthy of Alexandria, Virginia, who was suspended from practice as a patent attorney before the United States Patent Office, effective April 11, 1974 (922 O.G. 1), is hereby, on the basis of a sufficient showing, reinstated on the register of attorneys effective July 19, 1974.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,441,960, P. Eisler, MANUFACTURE OF ELECTRIC CIRCUIT COMPONENTS; **3,002,260,** Shortt and Langton, PRINTED CIRCUIT COMPONENT AND A METHOD OF MANUFACTURING SAME, **filed** April 25, 1962, U.S. Court of Claims (District of Columbia), Doc. 127–62, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Inc.* v. *The United States,* Order, judgment entered in favor of plaintiff, Jan. 25, 1974.

2,702,829, M. F. Chapel, STORAGE BATTERY CELL PLATE INTEGRATOR, **filed** Jan. 24, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–188–F, *Milton F. Chapel* v. *Amerace-Esna Corporation. Same,* **filed** Jan. 24, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–189–F, *Milton F. Chapel* v. *Gould Incorporated.*

2,902,784, D. Sukul, ROOM SERVICE INDICATOR, **filed** Jan. 31, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–255, *Lily D'Aguiar* v. *Ruttle Associates, Inc.*

2,933,223, Kravig and Johnson, DECORATIVE BOWS AND METHOD AND MACHINE FOR FABRICATING THE SAME; **3,112,240,** same, DECORATIVE BOWS, **filed** Dec. 20, 1973, D.C. Mass. (Boston), Doc. CA 73–4277–T, *Wm. E. Wright Co.* v. *Minnesota Mining & Manufacturing Co., Inc.*

2,966,632, G. C. Sziklai, MULTISTAGE SEMI-CONDUCTOR SIGNAL TRANSLATING CIRCUITS, **filed** Feb. 8, 1974, D.C. Del. (Wilmington), Doc. C.A. 74–26, *RCA Corporation* v. *General Motors Corporation.*

3,002,260. (See 2,441,960.)

3,019,497, Horton, Ashbrook, and Feagin, MAKING FINE GRAINED CASTINGS; **3,157,926,** same; **3,259,948,** R. C. Feagin, same, **filed** Mar. 1, 1972, D.C. Oreg. (Portland), Doc. C–72–168, *Howmet Corporation* v. *Precision Castparts Corp.*

3,112,240. (See 2,933,223.)

3,124,385, H. P. Neptune, CABLE LIFT PICK-UP UNIT, **filed** Feb. 5, 1974, D.C., S.D. Calif. (San Diego), Doc. 74–56–S. *Superior Concrete Accessories, Inc.* v. *Herman P. Neptune.*

3,131,106, F. W. MacKenzie ADHESIVE TRANSFERS; **3,212,913,** same, **filed** Jan. 28, 1974, D.C., E.D.N.Y. (Brooklyn), Doc. 74C 142, *Letraset USA Inc.* v. *Keuffel & Esser Company Inc.* **Same, filed** Jan. 30, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c289, *Letraset USA Inc.* v. *Pressure Graphics Inc.*

3,157,926. (See 3,019,497.)

3,173,990, R. P. Lamons, FOAM-DIELECTRIC COAXIAL CABLE WITH TEMPERATURE-INDEPENDENT RELATIVE CONDUCTOR LENGTH; **3,461,409,** R. F. Miller, GAS-SEALING ELECTRICAL FITTING FOR NON-CIRCULAR TUBULAR CONDUCTORS, **filed** Dec. 17, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c3021, *Andrew Corp.* v. *Justice Associates, Inc.*

3,212,913. (See 3,131,106.)

3,233,257, B. G. Biehl, CANOE; **D. 204,843,** same, **filed** Aug. 29, 1973, D.C., E.D. Mich. (Detroit), Doc. 74–70272, *Inner City Business Improvement Forum* v. *Craftline Industries, Inc.*

3,259,948. (See 3,019,497.)

3,461,409. (See 3,173,990.)

3,482,730, S. G. Podwalny, FREE SWING WASTE RECEPTACLE COVER, **filed** Nov. 30, 1971, D.C. E.D. Mo. (St. Louis), Doc. 71c739(4), *Rubbermaid Incorporated* v. *Continental Manufacturing Company.* Order filed decreeing plaintiff take nothing from defendant, Jan. 29, 1974.

3,621,143, C. W. Chambers, Jr., CURRENT-CONTROLLED VOLTAGE BOOSTER FOR TELEPHONE SYSTEMS; **3,639,696,** same, MULTISTATE VOLTAGE BOOSTER CIRCUIT FOR TELEPHONE SYSTEMS, **filed** Dec. 27, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3234, *Lorain Products Corporation* v. *Telephone and Data Products, Inc.*

3,639,696. (See 3,621,143.)

3,665,637, I. Starr, BUBBLE PIPE TOY, **filed** May 21, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1138–JWC, *Imperial Toy Corporation* v. *Chemtoy Corporation.* Filed judgment and order thereon that plaintiff does not infringe any of the claims of U.S. Patent 3,665,637, entered Feb. 4, 1974.

3,736,197, Messerschmidt, Heyman and Johnsen II, POWDERLESS ETCHING BATH COMPOSITIONS AND ADDITIVES, **filed** May 29, 1973, D.C. Del. (Wilmington), Doc. 4663, *Mona Industries, Inc.* v. *Philip A. Hunt Chemical Corporation.* Civil Action was transferred to the District of Newark, N.J., Dec. 21, 1973.

3,737,135, W. A. Bertolini, LOCKING DEVICE; **3,767,255,** same, CHASSIS WITH LOCKING DEVICE, **filed** Feb. 5, 1974, D.C., N.J. (Newark), Doc. C–74–162, *Bertolini Engineering Co., Inc.* v. *Zim-Israel Navigation Co., Ltd. and Zim American Israeli Shipping Co., Inc.*

3,767,255. (See 3,737,135.)

D. 204,843. (See 3,233,257.)

D. 230,095, R. T. Rylee II, EXTRACTOR FOR USE IN IMPLANTING PROSTHESIS IN TOTAL KNEE ORTHOPEDIC PROCEDURE; **D. 230,096,** same, TEMPLATE FOR USE IN IMPLANTING PROSTHESIS IN TOTAL KNEE ORTHOPEDIC PROCEDURE; **D. 230,097,** same, PUSHER FOR USE IN IMPLANTING PROSTHESIS IN TOTAL KNEE ORTHOPEDIC PROCEDURE; **D. 230,098,** same, SAW GUIDE FOR USE IN IMPLANTING PROSTHESIS IN TOTAL KNEE ORTHOPEDIC PROCEDURE, **filed** Jan. 18, 1974, D.C., N.D. Tex. (Dallas), Doc. CA3 74–50, *Wright Manufacturing Company* v. *Howmedica, Inc.*

D. 230,096. (See D. 230,095.)

D. 230,097. (See D. 230,095.)

D. 230,098. (See D. 230,095.)

3,096,801, Miles, Brown and Ward, SEED POTATO CUTTER, **filed** Apr. 11, 1972, D.C. Idaho (Boise), Doc. C–4–72–13, *Milestone, Inc.* v. *Lockwood Graders of Idaho, Inc. et al.* Stipulation and order for dismissal of case Dec. 11, 1973.

3,184,556, W. K. Larkin, MINIATURE HEADSET-MICROPHONE ADAPTED FOR USE WITH A MASK, **filed** Dec. 14, 1973, D.C., W.D. Mich. (Grand Rapids), Doc. K152–73CA 8, *Plantronics, Inc.* v. *Electro-Voice, Inc.*

3,227,273, Syverson and Syverson, PACKAGE; **3,289,385,** same, METHOD OF PACKAGING, **filed** Dec. 21, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3212, *Compact Industries, Inc.* v. *MB Packing Co. and Martin Smoler.*

3,262,027, Zaleske and Churchill, SOLENOID STRUCTURE AND MOUNTING MEANS THEREFOR, **filed** Nov. 3, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2786, *Automatic Switch Company* v. *Emerson Electric Co.* Order cause dismissed without prejudice under Rule 41 (a) (1), Dec. 18, 1973.

3,289,385. (See 3,227,273.)

3,312,124, Meier and Meier, STEERING-WHEEL ASSEMBLY FOR AUTOMOTIVE VEHICLES, **filed** Jan. 3, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–0010 RFP, *Kamei-Autokomfort and Superior Industries, Inc.* v. *S. S. Kresge Company.*

3,816,294, Freighner and Kapur, DETERGENT ALKYLATE AND THE SULFONATE DERIVATIVE, **filed** Jan. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 70c12, *Continental Oil Company* v. *Witco Chemical Corporation.* Judgment on mandate, plaintiff's patent is invalid. Cause dismissed with prejudice, Jan. 7, 1974.

3,426,960, P. B. Shore, PHONOGRAPH RECORD RECEIVING JACKET, **filed** Jan. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c46, *Shorewood Packaging Corp.* v. *Album Graphics.*

3,454,100, M. R. Lilley, WINDROWING FORK ARRANGEMENT FOR PEANUT DIGGER, **filed** Jan. 10, 1973, D.C., N.D. Ga. (Atlanta), Doc. 17656, *Ferguson Manufacturing Company, Incorporated* v. *Kelley Manufacturing Company.* Consent dismissal dismissing complaint and counterclaims with prejudice pursuant to Rule 41 (a) (1) (ii) F.R.C.P., Jan. 4, 1974.

3,473,681, S. Hall, Jr., SAFETY MEDICINE BOTTLE CLOSURE, **filed** Nov. 29, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–825–C, *Plastic Container Corp.* v. *Continental Plastics of Oklahoma, Inc.* Plaintiff is owner of patent; all of the claims of patent are invalid. Complaint and all causes of action dismissed with prejudice, Dec. 14, 1973.

3,488,868, West, Kuchta and Gutowski, MEASURING TOOL; **D. 213,643,** same, MEASURING TOOL FOR CARPENTRY AND THE LIKE, **filed** May 4, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72C438, *Stanley Works* v. *Oxwall Tool Co. Ltd.*

3,560,660, Poretti and Costa, TIME-ALLOCATION COMMUNICATION SYSTEM WITH SCRAMBLING NETWORK, **filed** Jan. 2, 1974, D.C., S.D.N.Y., Doc. 74–C–28, *Telectronics Corporation of America* v. *L.C.A. Sales Co. et al.*

3,606,154, R. C. Tufts, SPRAY COATING APPARATUS, **filed** Nov. 15, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2730–MML, *Mono-Therm Insulation Systems, Inc.* v. *Dellason, Inc., etc. et al.* Filed order dismissing action without prejudice, Court retains jurisdiction to reopen action if further litigation is necessary, entered Dec. 11, 1973.

3,657,060, T. I. Haigh, EMBROIDERED EMBLEM WITH THERMOPLASTIC ADHESIVE, **filed** Nov. 27, 1972, D.C.N.J. (Newark), Doc. C–1895–72, *The Penn Novelty Company* v. *Joel & Aranoff, Inc.* Stipulation and order of dismissal of action Dec. 26, 1973.

3,670,549, Tselikov, Nosal, and Verderevsky, METHOD AND APPARATUS FOR COLD ROLLING THIN WALL PIPE; **3,673,840,** same, COLD ROLLING PIPE MILL ROLLER TYPE ROLLING STAND; **3,680,345,** same, FLOATING, BLANK FEED AND TURNING MECHANISM FOR THIN-WALL PIPE MILL; **3,739,624,** same, PIPE BLANK CLAMP, **filed** Jan. 8, 1974, D.C., E.D. Wash. (Spokane), Doc. C–74–13, *Patent Management, Inc.* v. *Sandvik Special Metals Corporation.*

3,673,840. (See 3,670,549.)

3,680,345. (See 3,670,549.)

3,709,761, Trueb and Hesener, ADHESIVE TAPE DISPENSERS, **filed** Jan. 10, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c83, *Heinz Hermann Weick* v. *U.S. Industries, Inc.*

3,739,624. (See 3,670,549.)

3,743,793. S. T. Emerson, ANALOG SIGNAL RECORDING AND PLAYBACK METHOD AND SYSTEM; **3,754,264,** W. T. Blackband, RADIO DIRECTION FINDING APPARATUS, **filed** Dec. 15, 1973, D.C.N.J. (Camden), Doc. C–1813–73, *Periphonics Corporation* v. *Ali Systems, Inc. and Applied Information Industries, Inc.*

3,754,264. (See 3,743,793.)

3,781,480, R. R. Roge, LOOP EXTENDER, **filed** Jan. 7, 1974, D.C.R.I. (Providence), Doc. 74–3, *Wescom, Inc.* v. *Transcom Electronics, Inc.*

D. 213,643. (See 3,488,868.)

Certificates of Correction for the Week of Aug. 13, 1974

Re. 27,805	3,768,838	3,792,085	3,798,184
D. 229,518	3,769,077	3,792,131	3,798,216
3,507,362	3,770,498	3,792,330	3,798,251
3,549,020	3,770,792	3,792,409	3,798,311
3,573,747	3,772,715	3,792,471	3,798,389
3,575,938	3,773,266	3,792,726	3,798,438
3,595,747	3,773,923	3,792,770	3,798,486
3,608,958	3,774,775	3,792,987	3,798,616
3,611,982	3,775,371	3,793,185	3,798,760
3,622,943	3,775,505	3,793,276	3,798,928
3,645,500	3,775,672	3,793,332	3,799,077
3,646,524	3,775,968	3,793,577	3,799,142
3,647,874	3,776,818	3,793,590	3,799,488
3,665,471	3,777,289	3,793,601	3,799,549
3,673,614	3,777,885	3,793,663	3,799,636
3,678,381	3,778,332	3,793,689	3,799,855
3,688,250	3,778,476	3,793,764	3,799,867
3,690,716	3,779,080	3,793,862	3,799,928
3,691,093	3,779,939	3,794,017	3,800,063
3,692,375	3,780,094	3,794,244	3,800,199
3,696,154	3,780,423	3,794,351	3,800,320
3,697,090	3,780,589	3,794,572	3,800,535
3,708,425	3,781,067	3,794,695	3,800,588
3,709,352	3,781,256	3,794,833	3,800,629
3,709,857	3,781,400	3,795,361	3,800,640
3,717,316	3,781,528	3,795,407	3,800,728
3,717,741	3,782,042	3,795,639	3,800,733
3,719,908	3,783,091	3,795,774	3,801,335
3,722,621	3,783,133	3,795,809	3,801,353
3,726,665	3,783,203	3,795,850	3,801,483
3,732,215	3,783,291	3,796,068	3,801,804
3,740,226	3,784,705	3,796,104	3,802,003
3,742,837	3,785,120	3,796,105	3,802,410
3,743,697	3,785,184	3,796,153	3,802,535
3,744,489	3,785,214	3,796,514	3,802,600
3,744,766	3,785,235	3,796,689	3,802,759
3,745,183	3,786,558	3,796,786	3,802,803
3,745,594	3,786,634	3,796,803	3,803,024
3,751,092	3,787,388	3,796,924	3,803,042
3,753,958	3,787,628	3,796,999	3,803,080
3,755,080	3,787,757	3,797,245	3,803,261
3,755,329	3,788,015	3,797,272	3,803,279
3,755,587	3,788,876	3,797,335	3,803,281
3,755,806	3,789,369	3,797,345	3,803,332
3,756,770	3,790,269	3,797,392	3,803,447
3,756,950	3,790,317	3,797,422	3,803,760
3,757,124	3,790,472	3,797,467	3,803,930
3,759,587	3,790,646	3,797,536	3,804,219
3,760,233	3,790,669	3,797,657	3,804,812
3,762,627	3,790,766	3,797,708	3,804,860
3,763,279	3,790,789	3,797,767	3,805,004
3,763,824	3,791,229	3,797,806	3,805,033
3,763,904	3,791,447	3,798,034	3,805,066
3,765,615	3,791,525	3,798,099	3,805,369
3,766,723	3,791,996	3,798,138	3,806,385

Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,142,671, H. Kawaguchi, M. Okanishi, T. Miyaki, T. Ohmori, M. Matsuzaki, H. Koshiyama and H. Tsukiura, GLEBOMYCIN AND SALTS THEREOF, Interference No. 98,133, decided Apr. 1, 1974, claims 1, 2, 3, 4 and 5.

Patent No. 3,474,015, E. O. Norris, RECOVERY OF METAL VALUES FROM SEA WATER ENVIRONMENTS, Interference No. 98,001, decided Feb. 22, 1974, claim 9.

Patent No. 3,496,405, C. F. Mankus, APPARATUS FOR GENERATING A STEPPED VOLTAGE WAVEFORM, Interference No. 97,866, decided Mar. 11, 1974, claims 1, 2, 3, 4 and 9.

Patent No. 3,498,170, A. C. Sanford, CONNECTOR PLATE COMBINATION, Interference No. 97,685, decided Nov. 5, 1973, claims 1, 2 and 4.

Patent No. 3,533,835, R. J. Hagenbach and R. W. Madrid, ELECTROSTATOGRAPHIC DEVELOPER MIXTURE, Interference No. 98,028, decided Apr. 9, 1974, claims 6 and 9.

Patent No. 3,656,067, A. T. Zavodny, LASER CELL, Interference No. 98,220, decided Apr. 22, 1974, claims 1, 2 and 3.

Patent No. 3,657,119, J. E. Turbeville, POLLUTION CONTROL DEVICE, Interference No. 98,221, decided Feb. 19, 1974, claims 8, 9, 10 and 11.

Patent No. 3,683,201, T. Haraszti, LOGIC INTERCONNECTIONS, Interference No. 98,411, decided Apr. 10, 1974, claims 1, 2, 8, 9, 11, 12, 13 and 14.

Patent No. 3,704,474, J. G. Winkler, METHOD OF STRINGLASTING, Interference No. 98,467, decided Apr. 18, 1974, claims 1, 2, 3, 4, 5, 7, 8, 10, 11 and 12.

Dedication

3,418,246.—*Martin R. Royce,* Lancaster, Pa. RARE EARTH ACTIVATED YTTRIUM AND GADOLINIUM OXYCHALCOGENIDE PHOSPHORS. Patent dated Dec. 24, 1968. Dedication filed May 13, 1974, by the assignee, *Radio Corporation of America.*

Hereby dedicates the entire remaining term of said patent to the Public.

Disclaimers

Design No. 228,924.—*Leo P. Niemiec,* Morton Grove, Ill. FENCE SECTION. Patent dated Oct. 30, 1973. Disclaimer filed Jan. 28, 1974, by the inventor.

Hereby disclaims the claim of said patent.

3,126,523.—*Edward J. Rabenda,* Poughkeepsie, *Wayne D. Brodd,* Wappingers Falls, and *Eugene E. Marquardt,* Poughkeepsie, N.Y. FILE SEARCH DATA SELECTOR. Patent dated Mar. 24, 1964. Disclaimer filed Feb. 21, 1974, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1 through 3 of said patent.

3,210,102.—*Alvin Earl Joslin,* Clarkson, Ontario, Canada. PIPE COUPLING HAVING A DEFORMED INNER LOCK. Patent dated Oct. 5, 1965. Disclaimer filed Mar. 14, 1974, by the assignee, *Zapata Pipeline Technology, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Sept. 28, 1982.

3,212,995.—*Hsing T. Huang,* Groton, Conn., and *Thomas A. Seto,* Brooklyn, N.Y. 6-AMINOPENICILLANIC ACID PRODUCTION. Patent dated Oct. 19, 1965. Disclaimer filed Feb. 11, 1974, by the assignee, *Pfizer Inc.*

Hereby enters this disclaimer to claims 1–6 of said patent.

3,215,136.—*Norman J. Holter* and *Wilford R. Glasscock,* Helena, Mont. ELECTROCARDIOGRAPHIC MEANS. Patent dated Nov. 2, 1965. Disclaimer filed Feb. 22, 1974, by the assignee, *The Holter Research Foundation, Inc.*

Hereby enters this disclaimer to claims 14 and 15 of said patent.

3,236,975.—*Woodrow A. De Smidt,* Whitefish Bay, and *Donald V. Eckman,* Milwaukee, Wis. REMOVABLE SEGMENT, TRACK-MOUNTED TERMINAL BLOCK. Patent dated Feb. 22, 1966. Disclaimer filed Apr. 8, 1974, by the assignee, *Allen-Bradley Company.*

Hereby enters this disclaimer to claims 1 through 8 of said patent.

3,243,783.—*Edward J. Rabenda*, Poughkeepsie, *Wayne D. Brodd*, Wappingers Falls, and *Eugene E. Marquardt*, Poughkeepsie, N.Y. FILE SEARCH DATA SELECTOR. Patent dated Mar. 29, 1966. Disclaimer filed Feb. 21, 1974, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to claims 1 through 14 of said patent.

3,381,183.—*Norman C. Turner*, Hopatcong, and *James H. Cavitt*, Somerville, N.J. HIGH POWER MULTI-EMITTER TRANSISTOR. Patent dated Apr. 30, 1968. Disclaimer filed Apr. 19, 1974, by the assignee, *Radio Corporation of America*.

Hereby enters this disclaimer to claim 3 of said patent.

3,784,792.—*Bruce W. Dobras*, Dayton, Ohio. CODED RECORD AND METHODS OF AND APPARATUS FOR ENCODING AND DECODING RECORDS. Patent dated Jan. 8, 1974. Disclaimer filed Apr. 4, 1974, by the assignee, *Monarch Marking Systems, Incorporated*.

Hereby enters this disclaimer to claims 1 through 3 of said patent.

3,805,171.—*Ronald L. Drumheller*, New York, N.Y. SIGNAL FREQUENCY DETECTION CIRCUIT. Patent dated Apr. 16, 1974. Disclaimer filed June 24, 1974, by the assignee, *Eastech, Inc.*

Hereby enters this disclaimer to claim 7 of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 20, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds: Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-7-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-1-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-16-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-4-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-3-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	11-29-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-1-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-1-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing: Indicating.	4-11-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy: Measuring.	12-10-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-29-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	10-23-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-2-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-24-73
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures: Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating: Textiles; Apparel and Shoes; Sewing Machines.	11-1-73

Expiration of patents: The patents within the range of numbers indicated below expire during August 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,801,414 to 2,804 619, inclusive
Plant Patents..... Numbers 1,626 to 1,637, inclusive

REISSUES

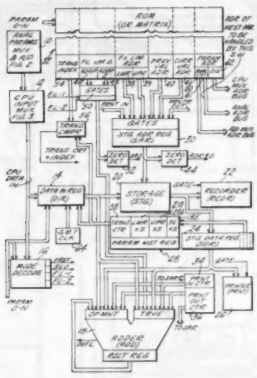
AUGUST 13, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,109
SELECTIVE DATA HANDLING APPARATUS

James Provenzano, Jr., Winsted, John Saunders, East Hartford, and Henry Monterose, Wapping, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Original No. 3,702,989, dated Nov. 14, 1972, Ser. No. 123,854, Mar. 12, 1971, which is a continuation of abandoned application Ser. No. 803,372, Feb. 28, 1969. Application for reissue Feb. 16, 1973, Ser. No. 333,582
Int. Cl. G11b *27/00*
U.S. Cl. 340—172.5 17 Claims



Raw data relating to a variety of parameters is analyzed to determine whether or not the current value or condition of the parameter is significant according to schedules of criteria which are subject to change. Criteria selection is adaptive, being dependent upon modes or conditions indicated by the parameter values being handled by the apparatus. Additionally, certain criteria may have floating limits, so that the base from which deviation is measured for the purpose of determining significance is adjusted whenever a signficant condition (deviation from a base by more than a permissible amount) occurs. Additionally, fixed limits are provided, particularly for parameters of the type that can result in a dangerous condition whenever the value of the parameter exceeds certain upper or lower limits. A given parameters may be tested for both floating limit and fixed limit conformance, and provision is made to take similar as well as different action in dependence upon exceeding the different types of limits. Provision is made to transmit the data, in this embodiment to record it for further analysis at a later date, in dependence upon exceeding a fixed limit a number of times more than a number setable to indicate probable successive number of transients. Exceeding a fixed limit results in printing an identification of the parameter which exceeded a fixed limit together with Greenwich Mean Time at the time of occurrence and an indication of whether an upper or lower limit was exceeded. Thereafter, that parameter will not cause printing until such time as the parameter value again falls within fixed limits.

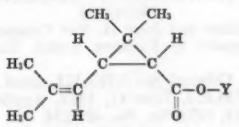
The disclosure embodiment utilizes standard data processing components in a relatively simple data flow arrangement, [will] *with* control provided by a parameter identification decode in a read only memory (hereinafter referred to as ROM) or large decoding matrix. The ROM provides for each given parameter: a transient index indicative of the number of *fixed limit excesses which are held to be within a number of* probable transients, thereby to be ignored; floating limit deviations (referred to symbolically herein as deltas) for a plurality of modes, the correct one being selected in dependence upon a given mode of operation; the addresses of both upper and lower fixed limits for the given parameter; the address in storage of the previous value used as a base for floating limits; the address of current values in storage which permits storing the present value of the parameter until it can be determined, at the end of a scan of all parameters, whether or not these parameters are to be recorded; and the addresses of the transducers or sensors—that is the actual input equipment—with which the parameter is related. Any parameter can have more than one parameter identifying number, so that polling of parameters can include more frequent polling of certain key parameters interspersed with sequential polling of all parameters, simply by providing the same connections for additional parameter numbers as may be provided for the basic parameter number for a given parameter. Progression of logical sequence and control is provided simply by a parameter counter which counts successively for each parameter analysis period, thereby polling the various parameter numbers in sequence, together with a program counter which identifies four different function periods, each subdivided into eight times, there being clock signals to identify first and second halves of each of the clock times. Provision is made to utilize main storage as a printer buffer storage as well as a one-scan recorder buffer storage.

28,110
CHRYSANTHEMIC ACID ESTERS

John Mervyn Osbond and James Charles Wickens, Herts, England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

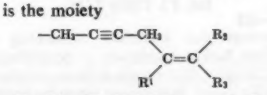
No Drawing. Original No. 3,663,591, dated May 16, 1972, Ser. No. 880,964, Nov. 28, 1969. Application for reissue Feb. 28, 1973, Ser. No. 336,680
Claims priority, application Great Britain, Dec. 9, 1968, 58,351/68, 58,352/68, 58,353/68, 58,354/68
Int. Cl. A01n *9/29*; C07c *69/74*
U.S. Cl. 260—468 H 14 Claims

The invention comprises chrysanthemic acid ester compounds of the formula

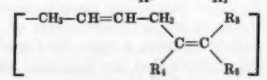


(I)

wherein Y is the moiety



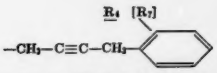
(a)



(b)

$-CH_2-C\equiv C-CH_2-C\equiv CH$ (*b*) [(c)].

or



wherein R^1–R_4 [R_7] is hydrogen or an alkyl group.

The compounds of formula I are useful as insecticides and are prepared by reacting an acid chloride with alcohol or by reacting a halide with a salt of a chrysanthemum carboxylic acid.

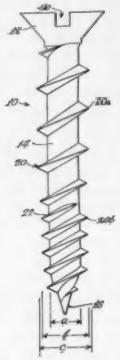
28,111
FASTENER WITH IMPROVED THREAD CONSTRUCTION

Richard C. Laverty, Palatine, Ill., assignor to MSL Industries, Inc.

Original No. 3,703,843, dated Nov. 28, 1972, Ser. No. 103,637, Jan. 4, 1971. Application for reissue Dec. 4, 1973, Ser. No. 421,549

Int. Cl. F16b *25/00, 39/30*

U.S. Cl. 85—46 **9 Claims**



A fastener having a shank divided into first and second portions respectively located adjacent a head end and a tapered pointed end with the first portion having a single thread formed thereon of uniform pitch. A multiple of parallel threads of similar uniform pitch are formed on the second portion of the shank and one of the threads on the second portion is a continuation of the thread on the first portion. All of the threads have a substantially uniform minor diameter while the major diameter of the upper single thread portion is greater than the major diameter of the lower multiple thread portion.

28,112
COLOR PHOTOGRAPHIC ELEMENTS AND PROCESS

Charles O. Edens and John H. Van Campen, Rochester, N.Y., assignors to Eastman Kodak Co., Rochester, N.Y.

No Drawing. Original No. 3,582,322, dated June 1, 1971, Ser. No. 736,010, June 11, 1968. Application for reissue Oct. 19, 1973, Ser. No. 408,234

Int. Cl. G03c *7/16*

U.S. Cl. 96—22 **20 Claims**

Color photographic elements containing differently sensitized silver halide emulsions, a nondiffusible yellow dye-forming coupler that reacts with an oxidized primary aromatic amine color developing agent to form a yellow dye and substantially no uncolored form of the yellow dye, a 5-pyrazolone coupler, a cyan dye-forming coupler and hydrophilic colloids that are *hardened with divinylsulfone hardening agent* [substantially free of aldehyde hardening agents] and substantially free of *aldehyde and* aldehyde-releasing hardening agents are advantageously color processed by color development step followed by a blix step to produce good dye image densities with substantially no uncolored forms of the dyes being present.

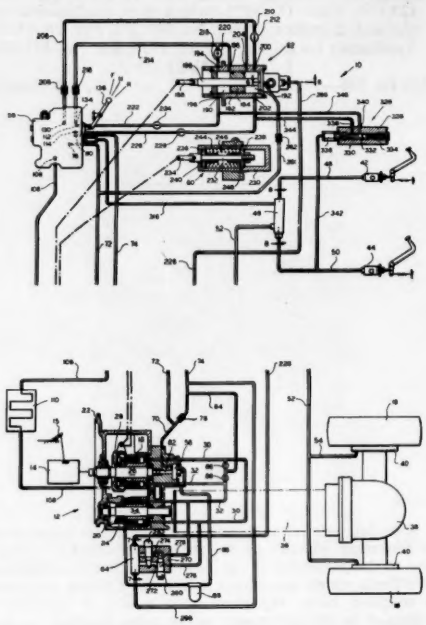
28,113
AUTOMATIC CONTROL SYSTEM FOR HYDROSTATIC DRIVE

Wayne B. Howard and Ronald L. Sisson, Jackson, Mich., assignors to Clark Equipment Co.

Original No. 3,636,705, dated Jan. 25, 1972, Ser. No. 71,704, Sept. 14, 1970. Application for reissue Sept. 27, 1973, Ser. No. 401,477

Int. Cl. F16h *39/46*

U.S. Cl. 60—447 **22 Claims**



An automatic control system for use with a hydrostatic drive having a variable displacement fluid pump drivingly connected to an engine. The control system includes a spring mechanism connected to the pump for returning the pump to its zero displacement position and mechanism connected to the pump and responsive to engine speed for actuating the pump away from its zero displacement position.

28,114
MICROWAVE GENERATING APPARATUS INCLUDING SPURIOUS SIGNAL SUPPRESSION MEANS

Harold C. Anderson, New Brighton, Minn., and David F. Graff, New Iberia, La., assignors to Litton Systems, Inc., Beverly Hills, Calif.

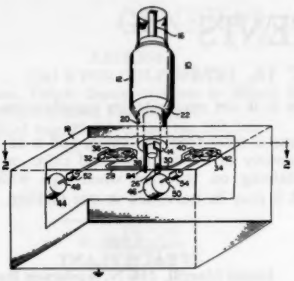
Original No. 3,697,804, dated Oct. 10, 1972, Ser. No. 79,764, Oct. 12, 1970. Application for reissue Feb. 5, 1973, Ser. No. 329,528

Int. Cl. H05b *39/00*

U.S. Cl. 315—105 **8 Claims**

A microwave generating apparatus is disclosed which includes suppression means for preventing high frequency signals from being propagated out of the apparatus through its cathode terminals to be radiated away from the apparatus. The suppression means includes a shield

member and a non-saturating ferrite member positioned around each of the cathode heater leads of the apparatus within the shield member. The ferrite member comprises



an elongated ferrite body having at least two apertures extending therethrough, with the lead element traversing both of these apertures in opposing directions.

28,115

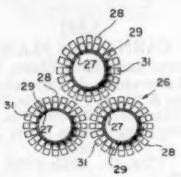
TUBE FINS OF OUTWARDLY-ORGANIZED MATERIALS

Herbert Wayne Cooper, Jericho, N.Y., assignor to Escoa Fintube Corporation, Pryor, Okla.

Original No. 3,731,738, dated May 8, 1973, Ser. No. 165,945, July 26, 1971. Application for reissue Aug. 20, 1973, Ser. No. 390,026

Int. Cl. F28f *21/02*

U.S. Cl. 165—180 **7 Claims**



This disclosure teaches a finned tube (or studded tube or the like) for convection sections of process heaters or boilers to improve heat transfer and reduce pressure drops of both process streams and flue gas. Tubes in this service are preferably of carbon steel which is, within this context, a relatively-high heat-conducting but relatively-low heat-resisting material. The finned tube is made of at least two materials organized proximally and distally relative the tube wall to which it is connected and from which it projects outwardly. The distal portion is made of a relatively-high heat-resisting but relatively-low heat-conducting material such as stainless steel. The proximal portion may be of a material the same as that of the tube wall or it may be of a material with heat-conducting and heat-resisting properties intermediate those of the tube wall and of the distal portion.

28,116

FILTER AND WATER RECIRCULATION SYSTEM

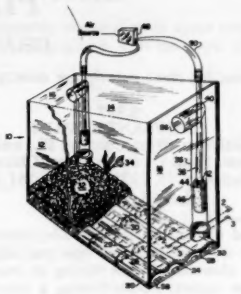
Harvey K. Cohen, Brooklyn, N.Y., assignor of a fractional part interest to Arnold Conn, Brooklyn, N.Y.

Original No. 3,720,318, dated Mar. 13, 1973, Ser. No. 127,292, Mar. 23, 1971. Application for reissue Nov. 23, 1973, Ser. No. 418,594

Int. Cl. E04h *3/16, 3/20*

U.S. Cl. 210—169 **14 Claims**

An aquarium filter water recirculation system comprises a water-carrying and an inner air-carrying member attached to a base member which is supported above the floor of an aquarium. Air is passed through the inner cylindrical tube, diffused, and mixed with the water in



the water-carrying member. The base member is made of polyvinyl chloride and is provided with a corrugated regular contour above which rests the gravel bed of the aquarium.

28,117

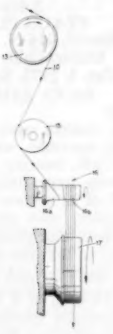
PRODUCTION OF TORQUE YARN

Charles M. Price, Candler, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Original No. 3,559,391, dated Feb. 2, 1971, Ser. No. 740,869, June 28, 1968. Application for reissue Oct. 14, 1971, Ser. No. 189,276

Int. Cl. D02g *1/02, 1/08*

U.S. Cl. 57—34 HS **16 Claims**



A treating system is disclosed for creating torque in running lengths of continuous filament or spun yarn. In a preferred embodiment, the yarn is elongated simultaneously with the torque producing operation. The treating system utilizes a conical yarn-driven idler roller which serves at least three functions, e.g., separates convolutions of yarn, derives energy from a motor-driven roller, and twists yarn passing over the conical portion to produce torque. The torque may be set by any desired means.

PLANT PATENTS

GRANTED AUGUST 13, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,587
CHRYSANTHEMUM

Robert E. Danielson, West Chicago, Ill., assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Aug. 16, 1972, Ser. No. 281,171
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 **1 Claim**

A new and distinct variety of *Chrysanthemum morifolium* of the standard incurved type providing very large, well formed, globular blooms having an overall light yellow color, the central florets having a somewhat darker shade of yellow than the much larger mass of outer florets, this new variety being the first yellow mutation of the variety Dignity (Plant Pat. 3,309).

3,588
CHRYSANTHEMUM PLANT

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, Chicago, Ill.

Filed Aug. 10, 1972, Ser. No. 279,512
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 **1 Claim**

A new variety of chrysanthemum plant particularly suited for summertime greenhouse production as a pot plant and having a dependable nine-week response for photoperiod culture. This is a vigorous variety producing a strong, well branched plant when grown as a pot mum and appears to have no tendency to heat delay in warm seasons. In the wintertime, the flowers of this variety develop a light bronze coloring as they open but as the seasons become warmer, the flower color is a good and attractive yellow.

3,589
PEACH PLANT

Grant Merrill, 416 N. Anderson Road, Exeter, Calif. 93221

Filed Oct. 3, 1972, Ser. No. 294,669
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach substantially as illustrated and described, which is characterized by a medium to large tree, bearing regularly and heavily for its season relatively large fruit with skin colored from half to nearly all of its surface with bright red and with a yellow undercolor, with scant pubescence and with freestone yellow flesh that holds its firmness while on the tree after ripening so that the first fruit is still firm when the last fruit is ready to pick, allowing the fruit to be harvested in one picking, or if the tree is properly pruned it may be mechanically harvested in one picking without excessive damage to the fruit; and which most nearly resembles June Lady (Plant Pat. 3,022) and Harmony (Plant Pat. 2,152), but is an improvement thereon in that it ripens its fruit about a week later than June Lady and is freer from the stone, and is an improvement on Harmony in having more red color on its skin and in remaining on the tree when ripe without softenig so that it may be harvested in one picking.

3,590
PEACH PLANT

Grant Merrill, 416 N. Anderson Road, Exeter, Calif. 93221

Filed Oct. 3, 1972, Ser. No. 294,670
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described and particularly characterized as being a medium size tree regularly bearing large fruit having a surface covering of brilliant red over from half to almost all of its surface and with freestone yellow flesh that stays firm near the surface when ripe so it may be picked in one picking, or when properly pruned may be mechanically harvested in one picking, and which most nearly resembles Red Lady, also known as Scarlet Lady 2 (Plant Pat. 2,601), but is an improvement thereon in that it is a more vigorous tree and ripens its fruit about a week later.

3,591
CARNATION PLANT

Alexandre Barberet and Henri Blanc, La Londe, France, assignors to Laboratoire de Physiologie Vegetale de la Londe Barberet & Blanc, La Londe, France

Filed Mar. 30, 1973, Ser. No. 346,716
Claims priority, application Italy, Dec. 22, 1972, 33,460/72
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—70 **1 Claim**

A new variety of carnation plant of the miniature type distinguished by the pale pink color of its blossoms, the good branched arrangement of the inflorescense, its continuous high production of flowers on short sturdy stems, and its vigorous habit of growth.

3,592
CARNATION PLANT

Alexandre Barberet and Henri Blanc, La Londe, France, assignors to Laboratoire de Physiologie Vegetale de la Londe Barberet & Blanc, La Londe, France

Filed Mar. 30, 1973, Ser. No. 346,715
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—72 **1 Claim**

A new variety of carnation plant of the miniature type suitable for greenhouse production of cut flowers and most nearly resembling the miniature variety "Sam's Pride," this new variety being distinguished by the darker and bluish coloring of its flowers, the smaller size of its flowers which have fewer but more frilly petals, and its shorter and more rigid flower stems.

PATENTS

GRANTED AUGUST 13, 1974

GENERAL AND MECHANICAL

3,828,364

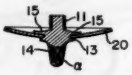
CALK FOR GOLF SHOES

Yahyo Aoyama, Tokyo, Japan, assignor to Miyata Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1973, Ser. No. 392,747

Int. Cl. A44b *21/00*

U.S. Cl. 36—67 B **6 Claims**



A calk to be mounted on the sole of a golf shoe, wherein the central spindle is made of a semi-hard steel containing about 0.45 percent of carbon and only the portion of said central spindle projecting below the base plate thereof is made to have a high hardness by quenching.

3,828,365

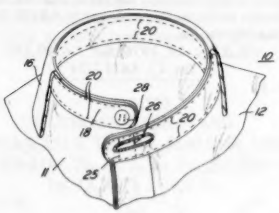
SELF-ADJUSTABLE SHIRT COLLAR

Samuel Berger, Apt. D-20, 4401 Conshohocken Ave., Philadelphia, Pa. 19131

Filed May 24, 1973, Ser. No. 363,404

Int. Cl. A41b *1/10*

U.S. Cl. 2—128 **6 Claims**



A self-adjustable shirt collar is described in which the neckbank of the collar comprises inner and outer bands with aligned button holes therein for engagement by the collar button on the neckband, an elastic strip being provided anchored in the inner and outer bands and spanning part of the length of the button hole for accomodation for the wearer to changes in neck size or neckband length.

3,828,366

PROTECTIVE FACE MASK

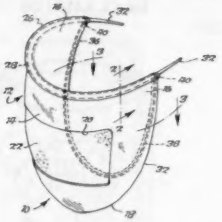
Victoria N. Conrad, 2007 Lockpark-Olcote Rd., Burt, N.Y. 14028, and Charles A. Nemec, 1586 Slayton Settlement Rd., Gasport, N.Y. 14067

Filed Mar. 20, 1972, Ser. No. 235,945

Int. Cl. A42b *1/18*

U.S. Cl. 2—174 **3 Claims**

A protective face mask comprising a flexible mask body conforming generally to the facial configuration of a wearer and being removably mounted at its upper end on a curved support member engageable with the upper portion of the wearer's head. The central forward portion of the mask body is provided with a porous section for filtering out particulates and minute spray globules while permitting normal breathing.



3,828,367

METHOD OF AND INSTALLATION FOR CONTINUOUS MANUFACTURE OF UNSEWN ARTICLES OF CLOTHING

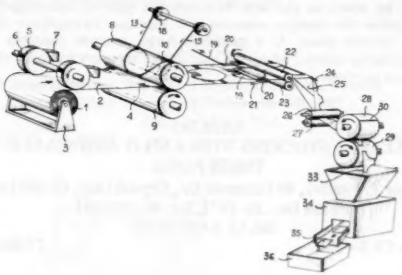
Alain Bourgeois, Le Puy-Haute-Laire, France, assignor to Elastelle Paul Fontanille & Fils, Haute-Loire, France

Filed Sept. 16, 1971, Ser. No. 181,062

Claims priority, application France, Sept. 18, 1970, 70.33899

Int. Cl. A41b *9/04*

U.S. Cl. 2—224 A **13 Claims**



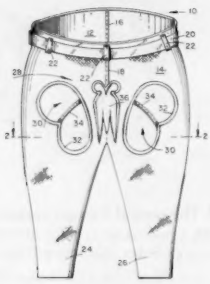
A method apparatus for installation for the continuous manufacture of articles of clothing constituted by a flexible non-elastic element on which is fixed locally at least one stretched elastic element adapted to confer on the said non-elastic element the faculty of stretching, the elastic element being fixed in position in the stretched condition. The said method comprising essentially the steps of: causing a continuous strip of said non-elastic element to travel, without being subjected to deformation, at a constant speed and always in the same direction; simultaneously causing at least one continuous tape or band of said elastic element to move in the same direction and at the same speed as the said strip, while subjecting said elastic tape to a pre-determined stretch; fixing the said elastic tape in the stretched condition on the said non-elastic strip; and cutting the assembly formed by the non-elastic strip and the elastic tape fixed on said strip, transversely to the direction of travel so as to obtain a continuous series

of articles separated from each other; the said non-elastic strip being further subjected at regular intervals to a second cutting operation following a predetermined outline so as to form rough shapes of the articles to be obtained.

3,828,368
WEARING APPAREL

Josephine Lam, P.O. Box 335 Canal Street Station, New York, N.Y. 10013

Filed May 21, 1973, Ser. No. 362,206
Int. Cl. A41d *1/06*
U.S. Cl. 2—227 **7 Claims**

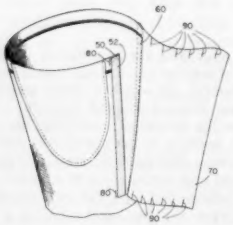


Wearing Apparel comprising a conventional pair of pants or trousers provided with a modified seat or rear portion thereof. The seat of the trousers is provided with apertures, openings or cutout portions therein, thereby exposing the wearer's skin or garment disposed beneath the trousers. Preferably, the cutout portions are symmetrical with respect to the rear trouser seam and display a particular design. A binding is preferably sewn to the edges of the cutout portion to provide a finished appearance and strengthen same. Additionally, an applique may be sewn to the seat between the pair of openings to complete the design, wherein the applique strengthens the rear trouser seam. In a modified form, a cover member is detachably connected to the seat of the trousers to cover the cutout portions.

3,828,369
ELASTIC STOCKING WITH A SPLIT ADJUSTABLE THIGH PANEL

Roger T. Swallow, 40 Dartmoor Dr., Crystal Lake, Ill. 60014

Filed Dec. 29, 1972, Ser. No. 319,181
Int. Cl. A41b *1/00*
U.S. Cl. 2—239 **2 Claims**

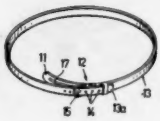


An elastic stocking has an upper thigh panel which is adjustable both at the top and bottom of the panel and is fastened in adjustable overlapping relation according to the location of printed indicia that appears along both the top and bottom edges of the panel for indicating where the fastening means should hold the overlapping part of the panel according to the known upper and lower circumferential thigh dimensions of the wearer.

3,828,370
BAND ADJUSTING DEVICE FOR GARMENTS

Johannes Ihmels, Berchof-Benn-Strasse 11, 4505 Iburg Teutoburgerwald, Germany

Filed Nov. 9, 1972, Ser. No. 305,034
Claims priority, application Germany, Nov. 10, 1971, 7143337; Jan. 21, 1972, 2202822; Oct. 17, 1972, 7238011
Int. Cl. A41f *9/00*
U.S. Cl. 2—322 **7 Claims**

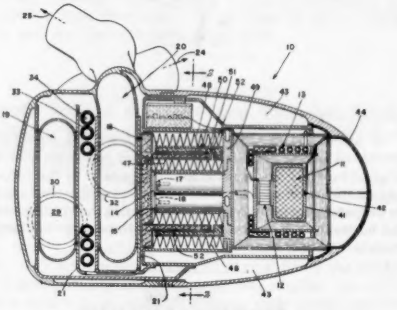


A band adjustment device for garments having overlapping parts separated from each other in the region of the waist or hips, for example trousers with overlapping front and back parts, characterised by the feature that a strip which forms a belt member is secured adjustably within a limited range and fixed in position on a buckle, preferably having a pivotal spike and said strip is provided with an oblong opening extending in the longitudinal direction of the strip and the buckle has a member limiting the longitudinal adjustment of the strip and engageable in the opening in the strip.

3,828,371
SELF-CONTAINED ARTIFICIAL HEART

David L. Purdy, Indiana, Pa., assignor to ARCO Nuclear Company, Philadelphia, Pa.

Filed Dec. 18, 1970, Ser. No. 99,635
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **18 Claims**

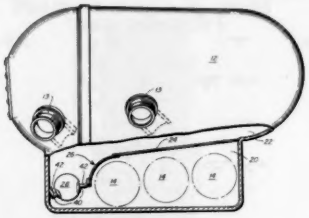


A small, self-contained blood pump with integral power source comprising an isotopic thermal source which drives both a Rankine cycle steam engine and a thermoelectric converter which generates electricity to drive a physiologically-responsive beat rate control system, a solenoid-driven feed liquid pump, and a plumonary edema protection system.

3,828,372
RECIRCULATING SEWERAGE SYSTEM

Alan H. Cornish, Newington, Conn.; George W. Foster, Los Angeles, and Alexander J. Campbell, Altadena, both of Calif., assignors to Koehler-Dayton, Inc., New Britain, Conn.

Filed Jan. 24, 1973, Ser. No. 326,435
Int. Cl. E03d *5/01, 5/16*
U.S. Cl. 4—10 **3 Claims**

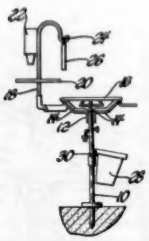


A recirculating sewerage system comprising at least one water closet, a recirculating tank including effluent receiving and pumping chambers separated by a common wall, a pump including a filtering element for drawing liquid from the pumping chamber and for directing the drawn liquid to the water closet to flush same, and a drainage opening defined in the bottom of the recirculating tank. The common wall including a filter for restricting the flow of bulk waste including paper products from the effluent receiving chamber to the pumping chamber; an opening; a drainage valve selectively sized for placement within the common wall opening and selectively displaceable from a first position whereat the drainage opening is closed to a second position whereat the drainage valve is open. Sealing means for effectively preventing the passage of effluent from the effluent receiving chamber through the common wall opening into the pumping chamber when the drainage valve is at the first position. The displacement of the drainage valve to the second position establishing a direct passage from each of the chambers to the drainage opening whereby both chambers will be completely drained.

3,828,373
OUTDOOR WASH STAND

Francis C. Fraley, 535 N. Third St., Saint Clair, Mich. 48079

Filed Oct. 26, 1972, Ser. No. 301,080
Int. Cl. A47k *1/04, 1/05*
U.S. Cl. 4—170 **4 Claims**

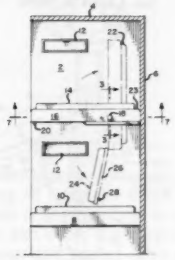


A wash stand for outdoor use and comprising a ground stake of sufficient length to stand at substantially waist height as vertically erected, a plurality of wire form members engaged to the ground stake and extended radially outward and upward at their ends to receive and support a wash bowl therewithin, and arcuate sectors provided on said wire form members for peripheral engagement and support of the wash bowl inwardly thereof and providing radiused cross members outwardly thereof for towel bar and other uses.

3,828,374
CONVERTIBLE BERTH

Richard J. Del Missier, Seattle, Wash., assignor to Tri-Way Industries, Inc., Seattle, Wash.

Filed Dec. 21, 1972, Ser. No. 317,414
Int. Cl. A47c *17/40*
U.S. Cl. 5—9 B **4 Claims**

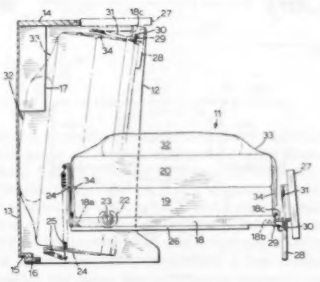


A two-level berth structure for use on ships or the like including a counterbalanced upper bunk mounted on a pivot having a torsion spring secured thereto. The pivot is rearward of the longitudinal centerline of the bunk such that the normal position i.e. the position reached by gravitational force would be down or horizontal. The lower portion of the bunk is hinged at the afteredge, when the upper bunk is raised to its vertical position the hinged portion swings downwardly to form a back supporting rest for an individual seated on the lower bunk. Movement of the upper bunk to the vertical position not only provides a back support but also provides ample clearance for the individual's upper torso.

3,828,375
STORABLE BEDS

Wilfred D. Driver, Box 132, Thessalon, Ontario, Canada

Filed Nov. 24, 1972, Ser. No. 309,309
Int. Cl. A47c *17/52*
U.S. Cl. 5—160 R **4 Claims**



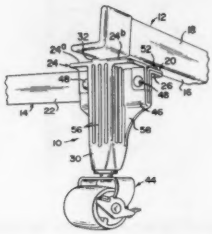
In a storable bed comprising a cabinet and a bed frame which is enclosed in the cabinet in a stored position, the frame has a front panel member fastened to its underside and a top panel member fastened to one longer edge, the top panel member constituting a bed side panel in the usable position, while it completes the cabinet top and determines the stored position of the frame in the stored position. A leg panel is pivoted to the bed frame and moves between stored and usa-

ble positions under its own weight; in the usable position thereof it constitutes a support leg for the frame extending alongside the bed side panel, while in the stored position it constitutes a front panel member of the cabinet enclosing the bed frame.

3,828,376
MOLDED BED FRAME LEG

Richard A. Miller, Bedford Heights, Ohio, assignor to Rusco Industries, Inc., Los Angeles, Calif.

Filed July 19, 1973, Ser. No. 380,585
Int. Cl. A47c *19/00*
U.S. Cl. 5—200 R **6 Claims**

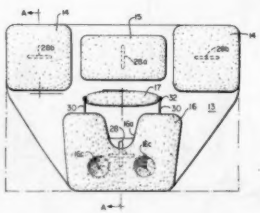


A molded plastic one-piece bed frame support leg having a pair of parallel, laterally spaced upper flange means, a U-shaped section connecting the flange means together and adapted to receive a leg of a cross rail angle therein, and a center tubular support section connecting to one of the flange means and blending into part of the U-shaped section. A caster can be completely received in and supported by the lower end of the tubular support section which is vertically extending when the bed frame is in use.

3,828,377
ADJUSTABLE BODY REST

George D. Fary, Sr., P.O. 258, Falling Waters, W. Va. 25419

Continuation-in-part of Ser. No. 329,041, Feb. 2, 1973. This application Sept. 11, 1973, Ser. No. 396,130
Int. Cl. A47c *21/00*, *7/32*
U.S. Cl. 5—327 B **10 Claims**

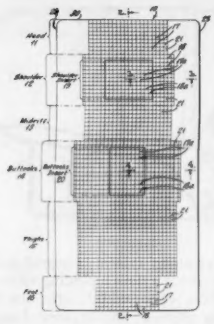


An adjustable head and upper body rest is disclosed which is intended primarily for supporting the body while lying face down. A head or face rest having an open portion for the nose and mouth is provided, together with chest and shoulder supports, permitting proper weight distribution and adjustment to different body dimensions, and allowing ease of breathing and body comfort.

3,828,378
SUPPORT MEANS FOR THE EVEN DISTRIBUTION OF BODY PRESSURE

Eric Flam, East Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed July 31, 1972, Ser. No. 276,506
Int. Cl. A61g *7/02*; A47c *27/22*
U.S. Cl. 5—345 R **6 Claims**



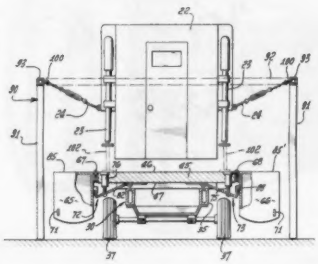
A mattress is provided having a gradation of its compression modulus such tht the weight of a person reclining thereupon is distributed uniformly. In the preferred embodiment, intersecting cut scores extend partially into the mattress and at their intersections provide upstanding columnar tufts. The mattress is especially useful for supporting patients susceptible to decubitus ulcers or who have traumatized skin resulting from burns and the like.

The surface area of the columnar tufts and the variance of the depth of the cut scores in the preferred embodiment reduces the pressure on body surfaces not only to below that which would occlude arteries, but on some surfaces to below the value determined to occlude capillaries. In one embodiment, areas of highest expected pressure are recessed below the mattress surface. The mattress can be wet-proofed by applying a film to clusters of the columnar tufts.

3,828,379
CAMPER CONVERTA BOAT

Bobby J. Walston, 4457 Parker Ave., Bakersfield, Calif. 93309

Filed June 1, 1973, Ser. No. 365,959
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T **3 Claims**



A camper converta-boat which is a camper-boat combination utilizing a conventional automotive camper, the body of which is removable from the truck chassis and is coupled with a flat bed trailer on which is supported for transportation purposes a catamaran type boat with a flat deck, including

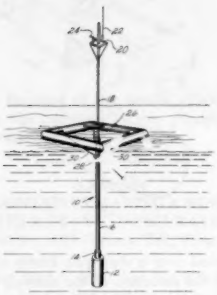
catamaran type pontoons for flotation purposes which are hinged to the deck body and foldable inwardly to reduce width for transportation, and swung down at the sides and locked in position for boating purposes.

3,828,380

FIXED FREEBOARD SPAR BUOY

Morris Lebovits, and James C. Schaff, both of San Diego, Calif., assignors to Global Marine Inc., Los Angeles, Calif.

Filed Mar. 8, 1973, Ser. No. 339,414
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R **4 Claims**



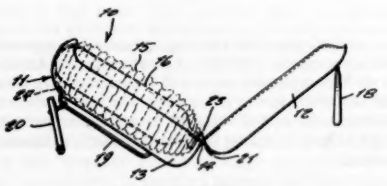
There is described an instrumentation buoy having an elongated vertical spar, the upper end of which has a collar to which is tied by a group of slack flexible lines, an annular float which surrounds the upper end of the spar. The flexible attachment between the float and the spar isolates pitch and roll motions of the float from the spar while providing coupling to vertical heave.

3,828,381

SAFETY SWIM OR SAFETY FLOAT EMERGENCY FLOAT

Irwin D. Prager, 34 Malone Ave., Staten Island, N.Y. 10306

Filed Feb. 6, 1973, Ser. No. 330,038
Int. Cl. B63c *9/16*
U.S. Cl. 9—316 **3 Claims**



An emergency water safety device designed primarily for protection of individual persons on or in the water, the device consisting of a capsule to be worn by a swimmer, the capsule containing an inflatable bladder and compressed gas cylinder, a pull on the outside of the capsule being operable by a swimmer when in emergency of drowning, the pull activating a mechanism that releases the gas into the bladder which when inflated opens the capsule so to float upon the water.

3,828,382

METHOD OF MANUFACTURING A FASTENER SUCH AS A BOLT, RIVET, OR THE LIKE

Yoshio Nakamura, Tokyo, Japan, assignor to Toyo Purasu Sukuryu Kabushiki Kaisha (Toyo Plus Screw Co., Ltd.), Kanagawa-Ken, Japan

Filed May 4, 1971, Ser. No. 140,093
Claims priority, application Japan, May 6, 1970, 45-37932
Int. Cl. B21k *1/46*
U.S. Cl. 10—27 R **13 Claims**

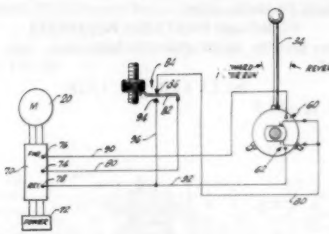
A method of manufacturing a fastener such as bolt, rivet and the like having an integrated flange on the head. The flange may be made of any metal and in any form, but must have a central flat part where it is integrated with the head. The head is two stage cold headed. After a first flowing cold heading, the head is inserted into an opening in the central flat part of the flange and finishing cold headed simultaneously with the integration of the flange on the head so that flow of structure of the head partly surrounds the part of the flange received in the head.

3,828,383

CONTROL ASSEMBLY FOR ATTACHMENT TO A MACHINE TOOL TO CONTROL THREAD TAPPING OPERATIONS

Colin G. Johnstone, 38732 Puerta St., Palmdale, Calif. 93550

Filed Sept. 4, 1973, Ser. No. 394,128
Int. Cl. B23g *1/18*
U.S. Cl. 10—136 E **20 Claims**



A control assembly for attachment to a machine tool such as a drill press or vertical miller, to control thread tapping operations. Such a machine tool typically includes a frame, a quill movable linearly on the frame supporting a motor driven spindle which turns a thread tap, and a control shaft for moving the quill. The control assembly includes an inner sleeve mounted on the control shaft and a concentric outer sleeve to which a control handle is connected. A lost motion connection enables the outer sleeve to move between opposite extreme positions relative to the inner sleeve and it is yieldably biased to an intermediate, neutral position. When the outer sleeve is at one extreme the motor is energized to drive the spindle in a direction causing the thread tap to feed into the workpiece. When it is at the other extreme, the motor turns the spindle in an opposite direction to feed the thread tap out from the workpiece. During other operations of the machine not involving thread tapping, the inner and outer sleeves can be locked together.

3,828,384
MACHINE FOR TREATING LASTED UPPERS

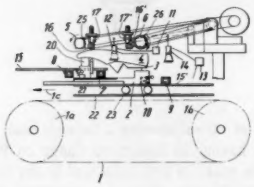
Johann Bechtold, Oberursel, Germany, assignor to Maschinenfabrik Moenus Aktiengesellschaft, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 255,052, May 19, 1972, Pat. No. 3,733,632. This application Mar. 5, 1973, Ser. No. 338,403

Claims priority, application Germany, Mar. 6, 1972, 221064

Int. Cl. A43d

U.S. Cl. 12—1 A 10 Claims



The roughening machine for lasted uppers described in my copending allowed application Ser. No. 255,052, discloses the automatic transport of a lasted upper to roughening brushes. In accordance with the invention, pinched folds in the front and heel portions of the upper, are automatically removed by grinding or milling tools which, under the control of limit switches, are moved to an operative position when passed by the transported upper, before the upper is treated by the roughening brush.

3,828,385
APPARATUS FOR ASSEMBLING SHOE PARTS

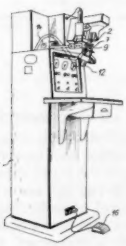
Frantisek Jancik, and Josef Polach, both of Gottwaldov, Czechoslovakia, assignors to SVIT, narodni podnik, Gottwaldova, Czechoslovakia

Filed Apr. 9, 1973, Ser. No. 349,313

Claims priority, application Czechoslovakia, Apr. 7, 1972, 2312-72

Int. Cl. A43b 5/12, 13/28

U.S. Cl. 12—24.5 7 Claims



Apparatus for covering shoe parts, such as molded insoles particularly, in which a frame has supported thereon a screw wiper arranged behind a pair of adjacent frusto-conical inner and outer pulling rolls. A presser means, such as a presser disk, is supported on a piston rod of a pressure cylinder containing a labyrinthine piston, the pressure cylinder being located below the screw wiper and pulling rolls, and movable in an axis parallel to the line of engagement of the pulling rolls.

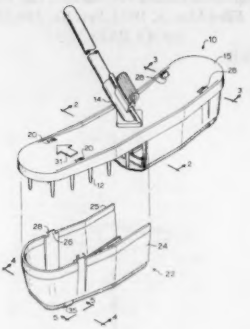
3,828,386
RUG CARE IMPLEMENT

Eric Michael Roth, R.R. No. 1, Unionville, Ontario, Canada

Continuation-in-part of Ser. No. 178,082, Sept. 7, 1971, abandoned. This application July 5, 1972, Ser. No. 269,166

Int. Cl. A46b 9/02; A47l 13/42

U.S. Cl. 15—105 8 Claims



Slides mounted over a slant pile fabric and extending approximately in the direction of the slanting pile allow use of such fabric to brush a rug. The fabric, its holder and slides can form part of an adaptor for a rug rake.

3,828,387
ROTATABLE BRUSH FOR CLEANING APPARATUS

Johannes Liebscher, Nassau Lahn, Germany, assignor to Leifheil International Gunter Leifhert KG, Nassau/Lahn, Germany

Filed July 13, 1971, Ser. No. 162,207

Claims priority, application Germany, July 28, 1970, 7028262

Int. Cl. A46b 7/10, 1/00

U.S. Cl. 15—182 6 Claims

A rotatable brush for cleaning apparatus is composed of a shaft supported for rotation within the apparatus. Attached to the shaft are a plurality of rows of bristles extending along the shaft in radially spaced relationship. The bristles are inclined relative to the axis of the shaft to permit maximum bristle length without increasing the overall diametrical dimension of the brush.

3,828,388
WINDSHIELD WIPER BLADE SNOW AND ICE SCRAPER ATTACHMENT

John R. Fuhr, Stone Gate Apt., Block 7, Apt. C6, Peekskill, N.Y.

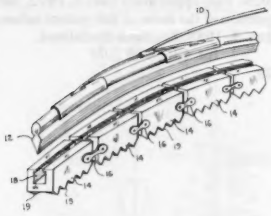
Filed Mar. 23, 1973, Ser. No. 344,226

Int. Cl. B60s 1/04

U.S. Cl. 15—250.41 8 Claims

An attachment for fitting over a standard vehicular windshield wiper which scrapes snow and ice from the windshield. The scraper takes the form of a multiplicity of

scraper blocks which are interconnected by chains or hinges so that the scraper blocks articulate over the outer surface of



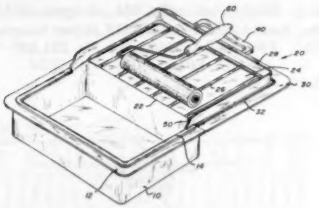
the windshield. Because of the swivel action of the scraper block segments, the curvature of any windshield is followed and effective scraping action is achieved.

3,828,389

UNITARY CONTAINER HAVING A HINGED PANEL WITH A TRAY CONFIGURATION

Raymond A. Heisler, 657 Dakota Trl., Franklin Lakes, N.J. 07417

Filed Mar. 9, 1973, Ser. No. 339,591
Int. Cl. B65d *43/10, 43/16*
U.S. Cl. 15—257.06 **11 Claims**



This invention pertains to a unitary container preferably generally rectangular in configuration. This container has one side or panel portion thereof hinged to the remainder of the container. This side or panel portion of the container is configured so that in its open condition there is provided a rimmed tray which may be used as a paint storage tray such as used with rollers and the like. The rim portion of the traytype side portion is adapted to fit within the rectangular remaining portion of the container. This remaining portion of the container provides the storage area. There is provided also an engaging tongue and groove portion which provides the seal of the container after initial use. The container in its initial condition has outwardly extending flange portions which are sealed to each other to provide a hermetic and fluid-tight seal of the container for storage, shipping and to prevent unwanted tempering.

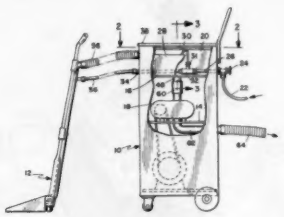
3,828,390

CARPET CLEANING MACHINE

Jerome D. Cater, 14135 Ezra Ln., Poway, Calif. 92064

Filed Sept. 13, 1971, Ser. No. 179,712
Int. Cl. A47l *7/00*
U.S. Cl. 15—321 **1 Claim**

Improvements in a carpet cleaning machine of the type employing hot water with a cleaning additive, ordinarily liquid, and progressively sprayed onto the carpet and then evacuated and discharged with entrained dirt, the improvements including arrangement of a dual purpose pump to provide the necessary suction into a filter as well as to apply sufficient pressure on the retrieved dirty water to drive the same toward a drain, and the cleaning head used to traverse the carpet is balanced



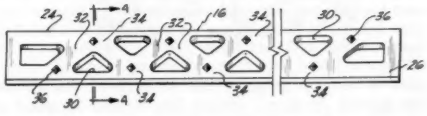
and weighted and has multidirectional spray nozzles for the hot water spaced sufficiently from the actual vacuum duct to assure reasonable time for the water and chemicals in the water to achieve their cleaning action before being drawn back into the cleaning head as the latter is moved at normal speed over the carpet.

3,828,391

TACKLESS CARPET STRIPPING

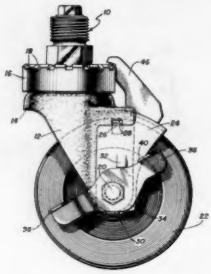
Lawrence R. Sutton, Detroit; Carl P. Ranno, Grosse Pointe Park, and Kenneth E. Hewson, Farmington, all of Mich., assignors to Performance Industries Inc., Pontiac, Mich.

Filed July 13, 1972, Ser. No. 271,376
Int. Cl. A47g *27/04*
U.S. Cl. 16—16 **6 Claims**



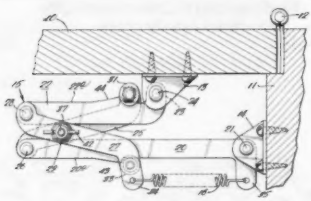
A tackless carpet stripping for attaching carpet or the like to a floor in a room wherein the stripping is fastened to the floor along the peripheral edge of the floor adjacent the walls of the room. The tackless carpet stripping is a one-piece integrally molded structure having an elongated member with its lower surface positioned on the floor and fastened thereto by means of nails or the like. The upper surface of the elongated member has a plurality of integral sharp-ending holding members projecting toward the wall at an angle inclined with respect to the upper surface of the elongated member. In the preferred embodiment the stripping has a plurality of regularly spaced apertures extending from the upper to the lower surface of the elongated member and is fabricated from a plastic material, such as polystyrene.

3,828,392
SWIVEL LOCKING CASTER BRAKE
Joseph Bolger, Summer St., Barre, Mass. 01005
Filed Aug. 23, 1972, Ser. No. 283,097
Int. Cl. B60b 33/00
U.S. Cl. 16—35 R 1 Claim



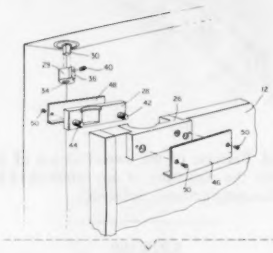
A swivel locking caster brake including a one-piece wheel brake and swivel lock constructed and arranged to apply the swivel lock separately prior to the application of the brake to the wheel.

3,828,393
DOOR RETURN AND CLOSURE MECHANISM
Charles Gorgas Pierie, 1460 Creek Rd., Huntingdon Valley, Pa. 19006
Filed Oct. 25, 1973, Ser. No. 409,408
Int. Cl. E05f 1/08
U.S. Cl. 16—65 8 Claims



A spring powered door closure is disclosed consisting of two primary levers pivotally connected to the door and frame respectively. The outer free ends of the two primary levers are interconnected by a pair of crossed connecting links. The connecting links are pivotally interconnected at their midpoints, have their outer end pivotally connected to the free end of a primary lever and their inner end interconnected with the other primary lever in a manner permitting a sliding connection with the primary lever. A tension spring connected between the inner end of one connecting link and the door frame exerts a closing force on the door. As the door approaches a closed position and the force exerted by the spring decreases, the sliding connection of the connecting links to the primary levers increases the moment arm of the primary levers resulting in a substantially uniform closing force on the door throughout its entire path of travel.

3,828,394
HINGE-DEVICE AND METHOD
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 107,232, Jan. 18, 1971, Pat. No. 3,722,029. This application Dec. 5, 1972, Ser. No. 312,363The portion of the term of this patent subsequent to Jan. 1, 1988, has been disclaimed.
Int. Cl. E05d 7/08
U.S. Cl. 16—129 8 Claims



A hinge for use with glass doors having solid frames includes a split hinge element for embracing a pivot in the frame around the door and providing a means and method of hanging the door.

3,828,395
TOILET SEAT RETAINER
Michael J. Grady, Annapolis, Md., assignor to Marshall A. Binder, Anne Aeundel County, Md., a part interest
Filed Aug. 16, 1972, Ser. No. 281,147
Int. Cl. E05d 11/08; A47k 13/24
U.S. Cl. 16—137 5 Claims

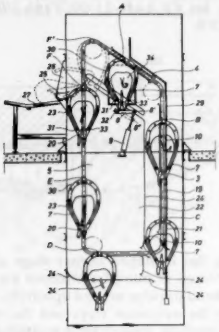
A device readily attached to toilets without tools or special skills to frictionally engage the transverse rear edge of a toilet seat and retain it open when it otherwise would fall down as a result, for example, of the presence of a thick, decorative cover on the toilet lid.

3,828,396
ANAESTHESIA PLANT FOR ANIMALS TO BE SLAUGHTERED
Niels-Erik B. Wernberg, Teglvaerksgade 37, 2100 Copenhagen O, Denmark
Filed May 4, 1972, Ser. No. 250,164
Claims priority, application Denmark, May 4, 1971, 2149/71
Int. Cl. A22b 3/08
U.S. Cl. 17—1 R 8 Claims

It is known to slaughter hogs in an anaesthesia plant in which the hogs are hanging in traps shaped as troughs suspended in a two-chained paternoster elevator leading the troughs through a pit-shaped gas chamber. The trap has a tiltable side wall permitting the animal to be taken out from the plant in the vicinity of the entrance of the plant.

It is now suggested to arrange a gable at each end of each trap, said gable being suspended in the elevator and being al-

ways kept in a vertical position. In each pair of gables the trap is suspended in its entirety on pivots in the one side of the ga-



bles in its active position the trap rests against fixed stops on the other side of the gables. The animal is delivered by turning the trap over pivots mentioned.

3,828,397

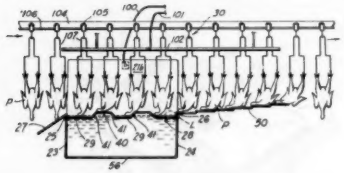
POULTRY STUNNING APPARATUS

Grover S. Harben, Jr., Gainesville, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.

Filed Sept. 26, 1972, Ser. No. 292,391

Int. Cl. A22c *21/00*

U.S. Cl. 17—11 **8 Claims**



A poultry stunning apparatus and method for stunning and thereby immobilizing poultry for a sufficient length of time that it can be more readily handled for killing.

The apparatus includes a tank for containing a non-toxic electrolyte liquid, such as salt and water, the level of which is maintained by a float valve. Poultry, disposed head down on successive shackles, are moved across the tank at such a height with respect to the tank that the head of each bird is pulled along the surface of a foraminous electrode tray, successive increments of which are disposed in staggered relationship, slightly above and slightly below the liquid level. Thence, the bird is pulled up an inclined drain plate which directs excess liquid back into the tank.

Cranks and cables enable the tank to be raised or lowered so as to be at the proper level for the poultry line. Make-up water is automatically fed to a feed tank over a grid type strainer on which salt crystals are deposited for being dissolved in the make-up water.

An electrical circuit from the shackle to the tank is closed by the fowl, when its head contacts the electrolyte, thereby stunning and immobilizing the bird.

3,828,398

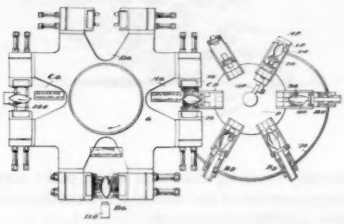
METHOD AND APPARATUS FOR SHUCKING BIVALVES

Sterling G. Harris, Beaufort; Joseph D. Smith, Orangeburg; David D. McCall, Orangeburg; Glenn S. Moore, Orangeburg, all of S.C.; William P. Hidden, Wenham, and Noel Svendsen, Bedford, both of Mass., assignors to Harris Automated Machinery Company, Beaufort, S.C.

Filed May 6, 1971, Ser. No. 140,686

Int. Cl. A22c *29/00*

U.S. Cl. 17—74 **95 Claims**



A bivalve shucking machine includes a spider rotatable about a vertical axis, on the arms of which are mounted bivalve holders the jaws of which are differentially operated to grip successive bivalves fed thereto, from which a substantial part of the liquid between the shells has been removed, and in the same orientation in which the hinge end is upward and the center of the adductor muscles are at the same distance from the axis of rotation of the spider. The spider is rotated to bring the bivalve beneath one or more vibrators, the vibrators then being lowered to bring them into engagement with the bivalves, and the vibrators then operate to vibrate the shells to cause the meat to fall into the lower parts. The bivalves are then raised at another station of the holders between two gripping members mounted on a rotating table and gripped between the gripping members, whereupon the holder is released and moved downward. The bivalves are then moved past a rotating saw blade which cuts off enough of the tops to remove the hinge and leave a hole. At a further station, the upper edges of the shell adjacent the hole are arranged from the inside and the outside, the gripping force is reduced while the upper edges are puller apart and then gripped more securely. Knives are passed from above downward through the enlarged hole between the shell engaging members to sever the adductor muscles and, passing completely through the bivalve, to spread apart the lower end of the shells to allow the meat to drop out between the bottom ends of the shells. The engaging members are released, and the shells are carried to another station and dropped.

3,828,399

APPARATUS FOR FELTING FIBROUS ELEMENTS

Robert D. Lambert, Fort Wayne, Ind., assignor to Multiply Development Corporation Ltd., Vancouver, B.C., Canada

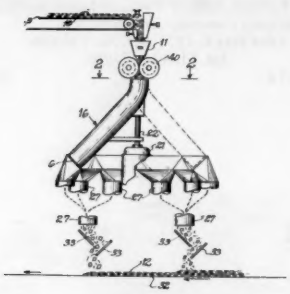
Filed Mar. 9, 1972, Ser. No. 233,244

Int. Cl. D01g *25/00*

U.S. Cl. 19—155 **8 Claims**

Improvements are disclosed for securing a greater uniformity of the deposition on a moving surface, of particulate material flowing uniformly to the depositing means in a narrow

stream, to form a mat of any desired width on the moving surface, by feeding the stream into the center of the intake of a



horizontally revolving distributor whose outlet continuously discharges portions of the material into a circular arrangement of inlets of individual conveyors.

3,828,400

HYDRAULIC MOTORS AND THE LIKE

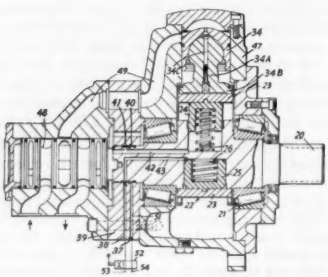
Brian Edward Mason, and Michael Iain Young, both of London, England, assignors to Chamberlain Industries Limited, London, England

Filed Jan. 27, 1972, Ser. No. 221,366

Claims priority, application Great Britain, Jan. 29, 1971, 3532/71

Int. Cl. F01b *13/06*; **F04b** *1/30*

U.S. Cl. 91—497 **8 Claims**



A radial-cylinder hydraulic motor in which a series of reciprocating pistons are arranged around an eccentric mounted on a drive shaft, has a novel eccentric construction, the eccentric comprising an annulus which is driven by the pistons, and opposed piston-and-cylinder devices which are based on said drive shaft carry the annulus towards and away from the axis of the drive shaft to vary the throw of the eccentric and thus the displacement of the motor. The piston-and-cylinder device which moves the annulus away from the shaft axis is preferred to have a larger effective working area than the piston-and-cylinder device which moves the annulus towards the shaft axis.

3,828,401

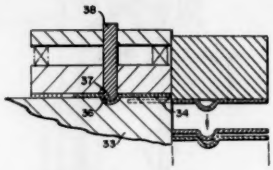
NON-STAKING CORNER SLUGS FOR JOINING MITRED EXTRUSIONS

Steve Poyak, 10 Starr Ave., Danbury, Conn. 06810

Filed Apr. 6, 1973, Ser. No. 348,731

Int. Cl. A44b *21/00*; **F16b** *1/00*

U.S. Cl. 24—73 B **14 Claims**



Substantially flat L-shaped corner slugs adapted for insertion in ways formed in mitred extrusions are provided with a raised central bead or ridge arched upwardly. The corner slugs are inserted in the extrusion ways and the mitred extrusions are assembled in their desired final relationship. The beaded corner slugs are then flattened, spreading their edges into swaged deformed interfering relationship with the extruded ways, firmly securing the mitred extrusions in their assembled condition. The corner slugs may be provided with either straight or saw-toothed edges; several different bead cross-sections are contemplated; and the extent of bead flattening is greater at the ends of the corner slugs than at their apices, maximizing the strengthening effect of the bead or rib, at the corner of the assembled mitred extrusion unit.

3,828,402

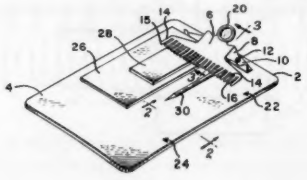
DEVICE FOR RELEASABLE GRIPPING ARTICLE

Walter M. Gorman, 45 Glen Ave., Troy, N.Y. 12180

Filed Apr. 16, 1973, Ser. No. 351,617

Int. Cl. A44b *21/00*

U.S. Cl. 24—81 PH **18 Claims**



A device for releasably holding one or more articles of different sizes and shapes. The device includes a rigid support member on which is mounted a base member, the latter being provided with a plurality of spring fingers extending therefrom. A spring under compression urges the base member toward the support member thereby gripping the article or articles to be held between the support member and spring fingers.

3,828,403

PIPE COUPLING

Duane O. Perrin, 3205 Merrill Dr., Torrance, Calif. 90503, and Julius G. Smegal, 10324 Banff St., Stanton, Calif. 80960

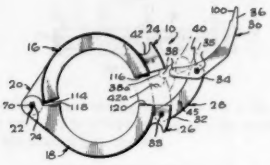
Filed Apr. 10, 1972, Ser. No. 242,575

Int. Cl. F16l *21/00*, *23/00*; **B65d** *63/00*

U.S. Cl. 24—270 **3 Claims**

A clamp that can be rapidly operated to hold the ends of two pipes together so as to connect them, and which facilitates field repair when the clamp breaks. The clamp includes two indentical body members having hinge ends where they are

hinged together and latch ends where they can be held together by a latch. The hinge end of each member has a pair of spaced hinge flanges, one located at one extreme side and the other located between the middle and other extreme side, to permit the pair of flanges on the two identical body members to be sandwiched into one another. A rubber seal is



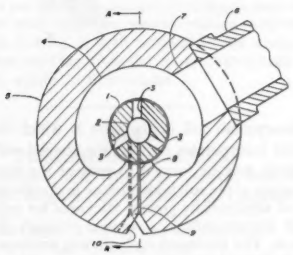
fastened to each body member, each seal extending slightly more than one-half circle, so that when the clamp is closed the ends of the seals on the two body members abut and compress against one another to form a tight seal. The latch end of each body member has a pair of laterally spaced strike flanges, and a latch lever passing between the strike flanges carries a latch member that clamps the strike ends together.

3,828,404

COMMINGLING JET FOR MULTIFILAMENT YARN

Frank Lee Peckinpaugh, Colonial Heights; Wilbur Leon Stables, Matoaca, and Raymond Joseph Biron, Petersburgh, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,770
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **4 Claims**



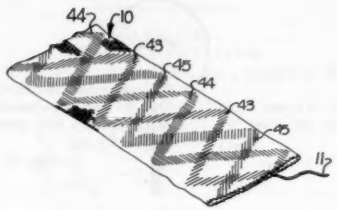
An improved apparatus and method for commingling multifilament yarn has been found. The apparatus comprises an elongated body having a straight yarn passageway with at least three orifices substantially equally spaced about the periphery of the body at substantially the same level. The orifice centerlines are offset so that they do not intersect with the center of the effective diameter of the yarn passageway. These orifices are drilled with a particular eccentricity, and communicate with a source of high pressure fluid which flows through the orifices into the yarn passageway causing yarn passing linearly through the passageway to have filaments commingled with one another. This improved process of entangling multifilament yarn can operate at from about 500 to about 8,000 feet per minute.

3,828,405

METHOD FOR IMPARTING COLORATION TO A TEXTILE YARN

George L. DeVinney, P.O. Box 182, Rutherfordton, N.C. 28139

Filed Oct. 12, 1972, Ser. No. 296,977
Int. Cl. D04b *19/00*
U.S. Cl. 28—72.16 **1 Claim**



Textile yarn which has been knitted into a tube and which is subsequently to be deknitted is advanced along a predetermined path of travel while dyestuff is freely dribbled thereonto from a nozzle overlying the path of travel. The tube is then passed through rolls which press the tube flat and force differential migration of the dyestuff and is immediately passed into and through a heated zone for setting the dyestuff on the yarn.

3,828,406

METHOD FOR FORMING A CAST HINGE

Karl Hannes, White Plains, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 187,427, Oct. 7, 1971, Pat. No. 3,742,555. This application May 30, 1973, Ser. No. 365,119
Int. Cl. B21d *53/40;* **B21k** *13/02*
U.S. Cl. 29—11 **11 Claims**

A cast hinged article and the method and apparatus for simultaneously casting both parts of the article. A first part of the article is formed with inner projections, and a second part of the article is formed thereover to enclose the projections to provide a hinged pivot. A staking unit which includes a punch then distorts the material in the first part adjacent to the projections so that the pivot will be freely movable.

3,828,407

METHOD OF MANUFACTURING ELECTRIC LAMPS

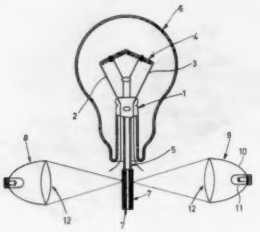
Anton Boekkooi, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 14, 1972, Ser. No. 288,920

Claims priority, application Netherlands, Sept. 17, 1971, 7112769

Int. Cl. H01j 9/00

U.S. Cl. 29—25.11 5 Claims



In the manufacture of incandescent lamps, discharge lamps and the like, glass parts are coated with a radiation absorbing pigmented lacquer which are softened or sealed by means of irradiation by light.

3,828,408

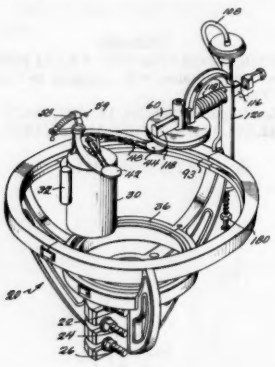
PIPE CUTTING AND PLUGGING MACHINE

Angel J. Ortiz, Rio Guadalquivin 30, Mexico 5 D.F., Mexico

Division of Ser. No. 123,779, March 12, 1971, now Defensive Publication No. 3,724,662. This application Jan. 8, 1973, Ser. No. 321,990

Int. Cl. E21b 29/00

U.S. Cl. 29—33 R 12 Claims



A machine for cutting and plugging a pipe having a frame for clamping onto the pipe, a cutting assembly mounted on a track on the frame for movement around the pipe including a motor driving the assembly and also rotating a pair of cutting blades respectively mounted on a pair of arms, and normally urged toward each other by a spring, and a plugging assembly with a cover plate, and an arm attached to the plate and mounted for movement toward and away from the pipe. When cutting is completed an explosive charge is detonated to liberate a further spring which forces the arms apart and operates a diaphragm to permit the arm to move toward the pipe. When the plate is over the cut-off pipe, a further shaft is urged by a spring into engagement with the arm to pivot it and clamp the plate tightly onto the open end of the pipe.

3,828,409

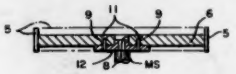
REVERSIBLY MOUNTABLE BOOK CUTTER

Peter Aspinwall, Carlisle, Mass., assignor to Comstock & Wescott, Inc., Cambridge, Mass.

Filed Apr. 23, 1973, Ser. No. 353,460

Int. Cl. B26d 1/12

U.S. Cl. 29—105 A 8 Claims



A cutting wheel for trimming the edge of a book has cutting bits of isosceles triangular cross section brazed in triangular notches around the periphery of the wheel. Each bit has cutting edges of two sets extending beyond both faces of the wheel, and the wheel has a mounting hub permitting the wheel to be reversibly mounted on a drive shaft to use one set of cutting edges when the other set on the same bits is dulled.

3,828,410

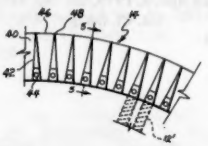
HONEYCOMB ROLL

Dieter F. Zeiffer, Charlotte, N.C., assignor to Gaston County Dyeing Machine Company, Mt. Holly, N.C.

Filed Feb. 22, 1973, Ser. No. 334,955

Int. Cl. B21b 27/02

U.S. Cl. 29—121 R 14 Claims



A honeycomb roll is provided in which the honeycomb structure incorporates partitioning aligned with the roll axis and which may be formed to present the thinnest practical outer edges at the roll body surface in combination with inner edges of substantially greater thickness for enhancing the effect of suction influence applied through the honeycomb structure. The preferred embodiment employs a plurality of specially formed annular members secured in assembled relation as a honeycomb structure in roll body form.

3,828,411

METHOD OF MAKING A FRICTIONAL CONNECTION BETWEEN AN ANTIFRICTION BEARING AND A SEALING RING

Gunter Zahn, Hilden, Germany, assignor to Ziller & Co., Dusseldorf, Germany

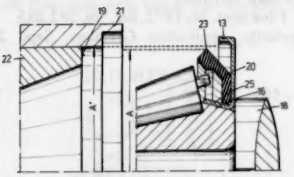
Filed Mar. 6, 1973, Ser. No. 338,432

Int. Cl. B23p 11/00; F16c 33/78

U.S. Cl. 29—148.4 S 2 Claims

A sealing ring structure and method of making same for an antifriction bearing. The sealing ring structure is composed of an outer sealing ring of substantially U-shaped cross section and the inner portion thereof is pressed upon a conical portion of the inner race ring of the antifriction bearing. The ceiling

ring structure is furthermore composed of an inner sealing ring, preferably of rubber or synthetic material, which is firmly



connected to the outer sealing ring and has a lip in frictional engagement with the bearing housing and the respective outer race ring of the antifriction bearing.

3,828,412

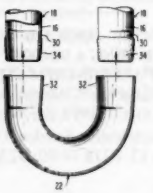
METHOD OF FORMING HIGH INTEGRITY EPOXY JOINT BETWEEN ALUMINUM TUBES

Moshe Y. Dreksler, Harwinten, Conn., assignor to Dunham Bush, Inc., West Hartford, Conn.

Division of Ser. No. 125,988, Mar. 19, 1971. This application Feb. 8, 1973, Ser. No. 330,545

Int. Cl. B21d *41/02*; **F16b** *11/00*

U.S. Cl. 29—157 R **3 Claims**



Aluminum tubes particularly useful in forming heat exchange coils are joined together by first flaring and necking respective tube ends to define tapered mating surfaces to insure maximum wetting of both surfaces by the epoxy which bonds the tubes together when the epoxy coated male tube is inserted axially within the female tube.

3,828,413

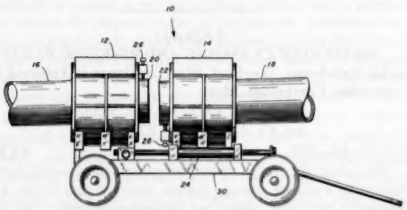
PIPE ALIGNMENT DEVICE

William F. Province, and Wayne E. Cooper, both of Bartlesville, Okla., assignors to The Ridge Tool Company, Bartlesville, Okla.

Filed June 11, 1973, Ser. No. 368,883

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 P **4 Claims**



This abstract describes improvements in a plastic pipe, thermal joining apparatus, in which two pipe elements are coaxially clamped, the ends faced and heated and then brought together under compression so that as the pipe material cools it will be joined. This improvement is required in those cases where the pipe ends are not completely circular or aligned. Circular track means are provided on the inner faces of the pipe clamping means and jack screw means are provided, to be positioned at different circumferential positions on said track means so that radial forces can be applied to the pipe ends, at any desired azimuthal position, so as to force them into matching contours.

3,828,414

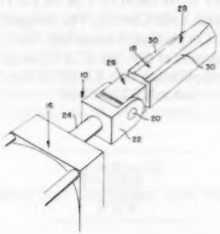
TUBE JOINING SYSTEM

Charles N. Apple, Sr., Greensboro, N.C., assignor to Metafab Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 219,754, Jan. 21, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,363

Int. Cl. B23p *19/00*, *11/00*

U.S. Cl. 29—200 B **15 Claims**



A tool, for securing together a first member having legs thereon, and a second tubular member for receiving the legs through openings provided therein. The tool includes inclined cam surfaces or inclined rollers which are adapted to be directed through the tubular member for engaging and deforming the legs.

3,828,415

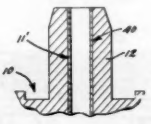
METHOD AND APPARATUS FOR REBUILDING VALVE GUIDES

James A. Kammeraad, and Donald J. Kammeraad, both of Holland, Mich., assignors to K-Line Tool Company, Holland, Mich.

Division of Ser. No. 847,927, Aug. 6, 1969, abandoned. This application Nov. 26, 1971, Ser. No. 202,207

Int. Cl. B23p *7/00*, *15/00*, *19/02*

U.S. Cl. 29—401 **12 Claims**



This disclosure relates to a method and system for rebuilding valve guides for internal combustion engines wherein the old worn guides are first reamed and then have slitted tubular members forced into the reamed guides. The tubular member inserts can then be reamed to size. The operation can also include knurling and broaching of the tubular members after insertion of the tubular member into the the reamed valve guide. The tubular member has an outer diameter greater than the inner diameter of the reamed guide so that a press fit between the tubular member and the guide results.

3,828,416

METHOD OF REINFORCING CONCRETE

Wilhelm Boyer; Josef Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to AVI Alpenlandische Veredelungs-Industrie Gesellschaft m.b.H., Osterreich, Austria

Filed June 11, 1973, Ser. No. 368,469
Int. Cl. B23p *17/00*
U.S. Cl. 29—417 9 Claims

The disclosure is concerned with the reinforcement of concrete by grids. Grids are produced in lengths of at least 50 metres and having longitudinal steel rods interconnected by transverse elements. Said grids are rolled up in their longitudinal direction and stressed past the yield point of said rods to produce a permanent deformation. To use said grid, pieces are cut off and straightened, and then laid longitudinally parallel side by side, the spacing between adjacent rods of adjacent pieces being equal to the spacing between adjacent rods within said pieces.

3,828,417

METHOD FOR FABRICATING COMPOSITE MATERIAL REINFORCED BY UNIFORMALY SPACED FILAMENTS

Amarnath P. Divecha, Falls Church, Va., assignor to Commonwealth Scientific Corportion, Alexandria, Va.

Continuation-in-part of Ser. No. 67,193, Aug. 26, 1970, abandoned. This application Oct. 22, 1971, Ser. No. 191,881
Int. Cl. B23p *17/00*
U.S. Cl. 29—419 16 Claims

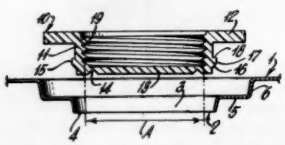
A method and apparatus for producing a composite material of the type having a number of filaments of one material separated by and bonded to a matrix of another material. As discussed below each of a number of filaments are wound with a number of turns of wire or foil which is made of the matrix material and these wound filaments are then consolidated by any suitable means, e.g. hot pressing, or drawing through rolls or properly shaped dies to produce a member from the composite material.

3,828,418

CLOSURE COMBINATION AND METHOD

Jeremiah J. Laurizio, New Providence, N.J., assignor to American Flange & Manufacturing Co., Inc., New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 304,239
Int. Cl. B23p *11/02*
U.S. Cl. 29—451 5 Claims



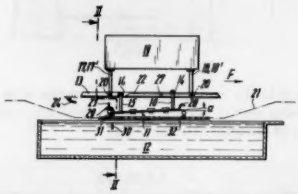
A closure bushing molded of synthetic plastic material has a cylindrical wall surrounded by a circumferential retaining shoulder and terminates at one end in a laterally extending octagonally shaped flange. The bushing wall is molded with an oversize pitch diameter internal straight pipe thread. Insertion of the bushing within a suitably sized container wall opening reduces the bushing wall interior to a standard pipe thread pitch diameter for reception of a threaded closure fitting.

3,828,419

AUTOMATIC SOLDERING MACHINE

Rudolf Wanner, Arolsen, Germany, assignor to Zevatron, GmbH, Arolsen, Germany

Filed Sept. 26, 1972, Ser. No. 292,283
Claims priority, application Germany, Sept. 29, 1971, 2148680
Int. Cl. B23k *31/02*
U.S. Cl. 29—503 21 Claims



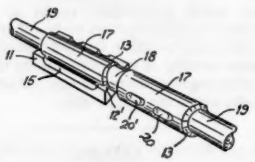
An automatic soldering machine in which objects to be dip soldered or touch soldered are carried by holders and moved by a conveyor into and out of contact with a molten solder bath. Guide rails selectively adjustable in position during a soldering cycle control the path of movement of the holder in the area of the solder bath. Cam actuators on the holder operate switches to establish a desired programmed movement of the guide rails, and conveyor.

3,828,420

METHOD OF CRIMPING A SOCKET TO A ROD FORMED OF ALUMINUM MATERIAL

Uno Svensson, Porlabacken 5, Bandhagen, Sweden

Filed Oct. 7, 1971, Ser. No. 187,565
Claims priority, application Sweden, Oct. 9, 1970, 13678/70
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—517 5 Claims



Method and apparatus for crimping a socket to a rod formed aluminium material using a matrix and a mandrel. The force acting upon the mandrel shall exceed the formula $G = A/52 + 1.6$ and be below the formula $G = A/38 + 3.0$, G is stated in tons and A in mm^2. The formulas are usable within the area 25 – 500 mm^2 for the rod formed material.

3,828,421

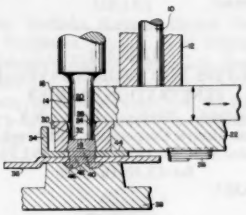
METHOD OF CLAMPING AND RIVETING PARTS

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 2, 1972, Ser. No. 303,065
Int. Cl. B21d *39/00*; B23p *11/02*
U.S. Cl. 29—522 4 Claims

Wire slugs for use as rivets are passed from a slug-forming station to a partial riveting station where a ram forces a slug through a restricted orifice in a spring-loaded guide and clamp member so that the guide and clamp member is pressed against the parts to be riveted as the slug is forced through the orifice into aligned holes in the parts. The parts are positioned upon an anvil which may be a fixture mounted on a turntable

moveable from station to station, and the anvil has recesses into which the lower portion of the slug is forced to form a lower cap. The hole in the bottom part is preferably slightly smaller than the hole through the top part so that the slug material will flow outwardly filling the top hole. locking the



parts in place and rendering hole alignment noncritical. Upon retraction of the ram, the spring-loaded guide and clamp member is elevated above the partially formed rivet and the two joined parts. The subassembly and anvil may then be moved to a rivet completion station where formation of a top rivet cap may be completed.

3,828,422

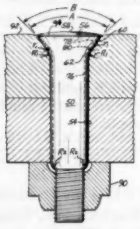
METHOD OF MAKING FATIGUE RESISTANT FASTENER JOINT

Hubert A. Schmitt, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 61,153, Aug. 5, 1970, Pat. No. 3,748,948. This application May 3, 1973, Ser. No. 356,878

Int. Cl. B23p *19/02*

U.S. Cl. 29—525 **3 Claims**



A flush head fastener pin for use in aircraft structural joints which are countersunk for surface flushness. The pin is shaped and adapted to preload the joint material surrounding the countersink to create a predetermined residual stress pattern in that region for improvement of fatigue life. Preferred embodiments of a straight shank bolt, a tapered shank bolt, and a rivet are presented. Each pin embodiment has a 70° conical head and a concave transition portion of specified radius and smoothness interconnecting the head with the shank. The 70° head and transition portion cooperate to conformably deform and preload the countersunk region of the hole, which is preferably provided with a convex surface of specified radius at the base of the countersink, and a conical surface having a greater cone angle than that of the pin. The straight shank bolt embodiment further discloses a hardened convex lead-in portion of specified shape and smoothness extending between the shank and the threads to prevent galling of the hole during installation of the bolt.

3,828,423

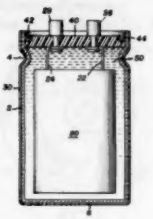
SELF-BONDING CAPACITOR CASE INSULATION

Joel B. Buice, and David G. Schwenker, both of Columbia, S.C., assignors to General Electric Company, Owensboro, Ky.

Division of Ser. No. 284,440, Aug. 28, 1972, Pat. No. 3,778,683. This application July 16, 1973, Ser. No. 379,570

Int. Cl. B01j *17/00*

U.S. Cl. 29—570 **3 Claims**



An improved aluminum electrolytic capacitor is provided having an electrically insulating coating securely bonded to the casing. The coating comprises an epoxy resin preferably applied as a powder and cured to the empty casing at an elevated temperature to secure a proper bond without damage to the electrical components subsequently assembled therein.

3,828,424

Patent Not Issued For This Number

3,828,425

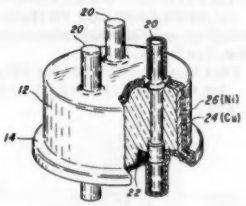
METHOD FOR MAKING SEMICONDUCTOR PACKAGED DEVICES AND ASSEMBLIES

Donald J. Manus, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 16, 1970, Ser. No. 81,354

Int. Cl. B01j *17/00*

U.S. Cl. 29—590 **11 Claims**

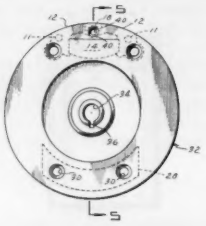


A semiconductor package fabricated from metals of atomic number less than 32 for use in any environment including a high radiation environment, and a process for fabricating a semiconductor package with reproducible electrical characteristics using mass production techniques. In the method, a base member, such as a metal header having metal terminal conductors and an area for attaching a semiconductor body, is first coated at least in part with a Soft Metal, such as copper, and then coated with a Hard Metal, such as nickel, or if a molybdenum-manganese metallized ceramic header is used, at least the metallization is coated with a metal strike, such as nickel, prior to coating the header with the Soft and Hard Metals, and then the base member is heat treated to form a header having an improved semiconductor body attachment area and electrical conductors.

3,828,426
METHOD OF FABRICATING MAGNETOMOTIVE DEVICES

Russell D. Phelon, Longmeadow, and John C. Van Amsterdam, Wilbraham, both of Mass., assignors to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Dec. 26, 1972, Ser. No. 318,521
Int. Cl. H02k *15/02*
U.S. Cl. 29—598 **7 Claims**

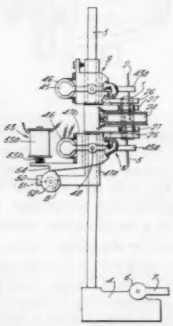


Method of fabricating magnetomotive devices by encapsulating a unitary pole-shoe magnet group into a casting of non-magnetic material. The pole-shoe portion of the group is formed of a plurality of integral, stacked ferromagnetic laminations, each having between the shoe portions an interconnecting web disposed radially inward of the outer surface of the pole-shoes. The magnetomotive device is cast so that the outer surfaces of the pole-shoe laminations are generally flush with the outer diameter of the casting. The interconnecting web portions are then removed so that the pole-shoes are magnetically separated. Alternatively, the disclosure is concerned with a pole-shoe magnet group for a flywheel magneto which is composed of a plurality of stacked ferromagnetic laminations embracing a permanent magnet. Each of the laminations has at least two pole-shoe portions interconnected by a web disposed radially inward of the outer surface of the pole-shoes whereby the web may be removed by a single drilling operation.

3,828,427
METHOD FOR PRODUCING A GLASS-ENCAPSULATED REED-CONTACT SWITCH

Theo Huttner, Tegersee, Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 20, 1973, Ser. No. 389,615
Int. Cl. H01h *11/00, 11/02, 11/04*
U.S. Cl. 29—622 **5 Claims**

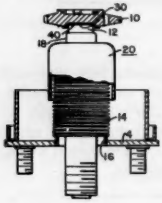


This disclosure relates to a method for producing reed switches whereby a first contact is embedded in one end of a glass tube, a second contact is positioned through the other end of the glass tube, the temperature of the other end is controlled to embed a portion of the second contact in viscous glass, a magnetic field is applied to both contacts during which time the second contact is moved with respect to the first contact until the reed switch is actuated, and finally, the other end of the glass tube is cooled to harden the viscous glass and hold the second contact.

3,828,428
MATRIX-TYPE ELECTRODES HAVING BRAZE-PENETRATION BARRIER

Paul O. Wayland, Montour Falls, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1972, Ser. No. 292,210
Int. Cl. H01b *19/00*
U.S. Cl. 29—630 C **5 Claims**



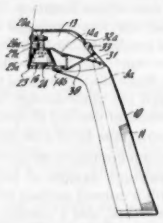
A braze-penetration barrier is provided for a sintered and infiltrated matrix-type of electrode or contact, so that, in effect, two joints are provided, one joint being provided between the metallic braze-penetration barrier and the sintered and infiltrated body portion of the matrix-type contact or electrode, and the other or second joint being provided between the metallic braze-penetration barrier member and the supporting rod-like metallic stem-portion of the interrupting contact or electrode.

The braze-penetration barrier member may be provided, for example, by pressing a preformed braze-penetration barrier member with the particles of the matrix system in the press, which is subsequently sintered and infiltrated with a lower-melting-temperature infiltrant material, such as copper or silver, for example, which penetrates into the pores of the higher-melting-temperature matrix material, such as tungsten or chromium, for example.

3,828,429
RAZOR WITH AN ENDLESS BAND

Paul Hiromura, 596 Warwick Ave., Teaneck, N.J. 07666

Filed Feb. 2, 1973, Ser. No. 329,100
Int. Cl. B26b *21/26, 21/54*
U.S. Cl. 30—40.1 **11 Claims**



A razor includes a replaceable snap-in cartridge containing a blade in the form of an endless band. The band is moved

crosswise to the direction of shaving by gears which are rotated by a traction wheel, the traction wheel being rotated when pulled over the skin.

3,828,430

ELECTRIC DRY SHAVER WITH CUT HAIR DISPOSAL MEANS

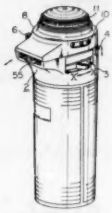
Norio Yamada; Yoritaka Ikejima; Hiromi Takasu; Masao Kubo, and Yoshimasa Tanaka, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 11, 1972, Ser. No. 279,775

Claims priority, application Japan, Aug. 19, 1971, 46-62612

Int. Cl. B26b *19/44;* **A47l** *9/20;* **B01d** *46/04*

U.S. Cl. 30—41.5 **8 Claims**



Electric dry shaver having cut-hair receiving means built in the shaver body and including manually rotatable means for arbitrarily discharging cut-hairs received in the receiving means without disassembling said means from the body through a normally closed aperture opened and closed by the rotatable means. Inner cutter includes a fan for producing an air current in direction away from outer cutter and the cut-hair receiving means is located in the air current passage and remote from the cutters. The receiving means has a filter for allowing only air to pass therethrough and a path large enough for allowing the air current and cut-hairs carried thereon to pass therethrough.

3,828,431

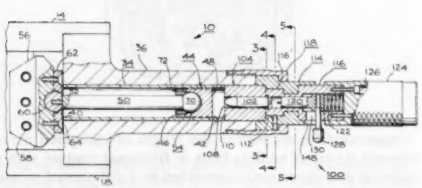
GAS ACTUATED DEHORNING TOOL

Robert W. Fleming, 944 Linda Vista Ave., Pasadena, Calif. 91170, and George Boothroy, 226 Crest More Dr., Paradise, Calif. 95969

Filed May 29, 1973, Ser. No. 339,112

Int. Cl. B26b *15/00*

U.S. Cl. 30—228 **10 Claims**



A gas actuated dehorning tool arrangement having a fixed blade coupled to one end of a pair of parallel rails and a moving blade slidably mounted on the pair of rails and adapted to move from the second end of the pair of rails and pass in horn severing relationship to the fixed blade. A tubular barrel is adjacent the second end of the rails and has a piston slidingly mounted therein. A connecting rod having universal joint connections to the moving blade and to the piston moves the moving blade as the piston is moved. A gas generating means generates a high pressure gas on the back face of the piston to drive the piston and thus the moving blade. The gas generating means incorporates structure for firing a pressure cartridge, which may be similar to a blank cartridge, and provides for simplified removal of an expended cartridge and insertion of a new cartridge.

3,828,432

SHEAR CONSTRUCTION

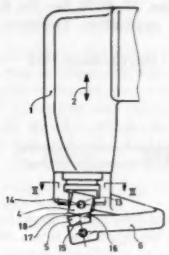
Berthold Leibinger, Gerlingen, Germany, assignor to Firma Trumpf & Co., Ditzingen, Germany

Filed Mar. 5, 1973, Ser. No. 337,852

Claims priority, application Germany, Mar. 11, 1972, 2211898

Int. Cl. B26b *15/00*

U.S. Cl. 30—241 **5 Claims**



A shear, particularly a portable shear, includes a first reciprocating blade and a second fixed blade which is mounted alongside the path of movement of the first blade for cooperative shearing operation therewith. Each blade comprises a block-like member having a plurality of separately oriented cutting edges disposed at angles to each other and the mounting means for each blade is such that the blades may be adjusted so as to present a selected cutting edge in an operative position.

3,828,433

MOUNTING DEVICE FOR THE MANUFACTURE OF DENTAL PROSTHESES

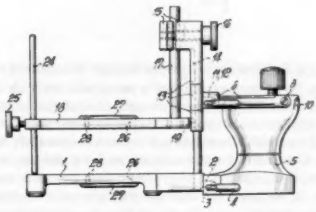
Horst Guenther Winkler, Hauptstrasse 15, 8722 Wiebelsberg, Germany

Filed Sept. 22, 1972, Ser. No. 291,364

Claims priority, application Germany, Sept. 23, 1971, 2147576

Int. Cl. A61c *11/00*

U.S. Cl. 32—32 **6 Claims**



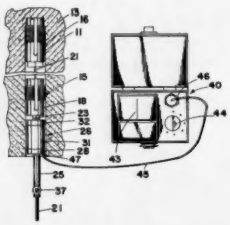
A first mounting device has a top plate vertically adjustable in parallel relation to a bottom plate, and a support bracket parallelly adjustable therebetween with means thereon for engaging a dentist's jaw model on the occlusion plane thereof, whereby hardenable material may be poured between the model and the top and bottom plates to provide two working surfaces on the model. A second mounting device having a bottom plate and a top plate guided in parallel therewith and adjustable in the vertical plane receives the working surfaces

of the model therebetween. However, an auxilliary alignable device insertable on the second mounting device in place of the top plate, and having an alignable vertically disposed blade-like alignment member at the front thereof with notches at either end for engaging the model, is first used to align the vertical symmetry axis of the model on the base plate whereby a screw-threaded ring can be secured to the model in alignment. Thereafter the ring secures the model to the base plate with a mating nut, with the ring engaging a key in an aperture through the base plate so the model is always in proper alignment for insertion of the teeth in the wax layer thereon.

3,828,434
MIXING CAPSULE
Wolfgang Mosch, Wengengasse 29, 79 Ulm, Danube, Germany
Filed Jan. 27, 1970, Ser. No. 6,221
Claims priority, application Germany, Feb. 1, 1969, 1904963
Int. Cl. A61c *5/04*
U.S. Cl. 32—60 **9 Claims**

A capsule for dental amalgam is provided with an internal piston for dispensing amalgam and is provided with means for attaching the capsule to a delivery means for advancing the piston; the other end may have a break-off closure.

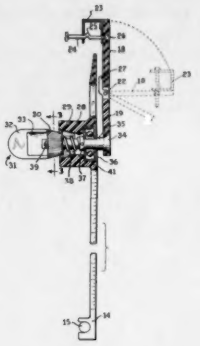
3,828,435
GEOLOGICAL MOVEMENT DETECTORS
Donald O. Baker, Columbus, Ohio, assignor to Linear Devices Inc., Columbus, Ohio
Filed Dec. 20, 1971, Ser. No. 209,531
Int. Cl. G01b *7/00*
U.S. Cl. 33—1 H **1 Claim**



A device for determining very minute movement, as well as relatively large movement, of a material such as rock in a mine. An anchor is secured to one part of the material, and another anchor is secured to a separated part of the material. A pair of movable elements are secured separately to the two anchors. One part of a transducer, as for example, in one embodiment, illustrated a carbon resistance bar of a variable resistance, is secured to one of the movable elements; and another part of the transducer, as for example in the same embodiment the wiper arm of the variable resistance, is secured to the other movable element. Thus, when one anchor moves relative to the other anchor, the resistance is varied. This is one type of linear transducer. In other types shown, an inductance or a capacitance is substituted for the variable resistance.

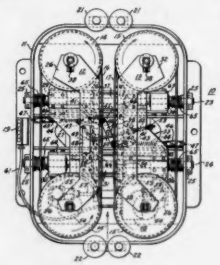
There is also provided an electrical circuit including a source or supply of electric power, the transducer, and a read-out device. The read-out device is shown herein as an ammeter.

3,828,436
SWINGING T-SQUARE
Calvin E. King, 300 Edgewood St., Hope, Ark. 71801
Continuation-in-part of Ser. No. 297,728, Dec. 24, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,112
Int. Cl. G01c *9/12*
U.S. Cl. 33—88 **12 Claims**



A geometrical instrument useful as a building tool has a T-square with a protractor head revolubly mounted on a stub shaft projecting from an adjacent rectangular panel, the blade of the T-square depending from the mounting. Stop means are combined with the shaft for selectively locking the T-square to the panel.

3,828,437
DEVICE FOR MEASURING ELONGATED MATERIAL
James C. Heselwood, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.
Continuation of Ser. No. 66,514, Aug. 24, 1970, abandoned. This application July 7, 1972, Ser. No. 269,697
Int. Cl. G01b *5/04*
U.S. Cl. 33—134 R **11 Claims**

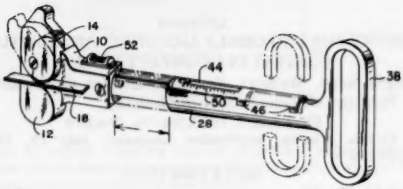


Apparatus for measuring the length of elongated material wherein a pair of endless belts in frictional contact with said material and operatively connected to a differential measures the length and records the measurement on a readout device.

3,828,438
SURVEYING TAPE TENSIONING AND LEVELING APPARATUS
John G. Raymond, Jr., P.O. Box 725, Strasburg, Va. 91320
Filed Sept. 8, 1972, Ser. No. 287,245
Int. Cl. G01b *3/00*
U.S. Cl. 33—137 R **5 Claims**

Apparatus for releasably gripping a section of a surveying tape to tension the tape including a gauge for measuring the

tension applied to the tape and a leveling gauge to facilitate properly positioning the tape. The apparatus is intended for



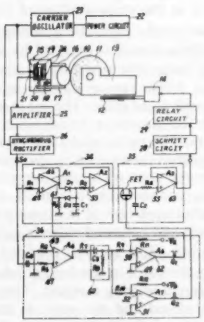
in-the-field use by a surveyor's assistant and is provided with a handle so that the appropriate tension may be applied to the tape.

3,828,439

SIZING SYSTEM FOR MEASURING THE DIAMETER OF A ROTATING WORKPIECE OF NON-CIRCULAR CROSS-SECTION

Mineo Ishikawa, and Kazuo Moriya, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan

Filed Aug. 21, 1972, Ser. No. 282,221
Int. Cl. G01b 7/12
U.S. Cl. 33—143 L **5 Claims**



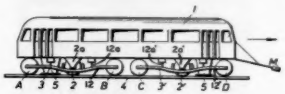
An in-process sizing device generates an output signal corresponding to the diameter of a rotating workpiece of non-circular cross-section. A signal generating circuit generates a first and a second signal each time the output signal is respectively increasing and decreasing in the cycle thereof. A peak holding circuit holds the voltage peak of the output signal in response to the first signal. A sample holding circuit picks up a voltage sample corresponding to a major diameter of the rotating workpiece from the voltage peak in response to the second signal and holds the same therein. Another circuit is connected to the sample holding circuit to generate a sizing signal when the voltage sample attains a voltage preset thereto in accordance with the desired particular diameter.

3,828,440

TRACK SURVEYING

Franz Plasser; Josef Theurer, and Egon Schubert, all of Vienna, Austria, assignors to Plasser, Franz Bahnbaumaschinen-Industrie Gesellschaft, m.b.H., Vienna, Austria

Continuation-in-part of Ser. No. 813,855, April 7, 1969, abandoned. This application Apr. 13, 1972, Ser. No. 243,619
Claims priority, application Austria, Apr. 9, 1968, 3508/68
Int. Cl. B61k 9/00, 9/08; E01b 29/00
U.S. Cl. 33—144 **11 Claims**



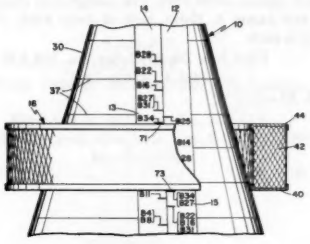
The track gage, camber or flexure, as well as the strength of the rail fastening may be measured with a surveying car with two surveying buggies or frames spaced from each other in the direction of track elongation and running on the track rails with the car. Each surveying frame has two axles having wheels running on the track rails. A respective undercarriage on which the car chassis is mounted is arranged between the two axles of a respective surveying frame. The surveying frames are preferably yielding and their axles and wheels indicate the relative position of the frames to each other and to the track.

3,828,441

AUTOMOTIVE AIR FILTER GAUGE

Richard E. Williams, 1942 Port Bristol Cir., Corona Del Mar, Calif. 92660

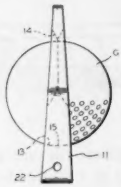
Filed Sept. 18, 1972, Ser. No. 290,165
Int. Cl. G01b 3/34
U.S. Cl. 33—178 B **6 Claims**



A gauge for classifying automobile air filters and identifying the applicable maufacturers part numbers. The gauge measures a combination of the inside diameter and relative height. The gauge is in a generally conical form and includes two vertically oriented scales along the surface of the cone. A first scale is designed to be read in association with the lower edge of the generally toridal configured air filters. The scale is marked with a series of part numbers and includes all the numbers that could be expected for air filters of that inner diameter. The second scale is designed to be read in association with the upper edge of air filter when the air filter is lodged with its inner diameter in contact with the conical surface. The second scale includes a list of those part numbers for air filters which lodge with their upper surface at that point. By reading both lists, the operator can identify the single part number which corresponds to an air filter having the inner diameter and height of the filter under measurement. The gauge includes a stand that allows the conical body to be tilted away from an upper support member for insertion of the filter onto the coni-

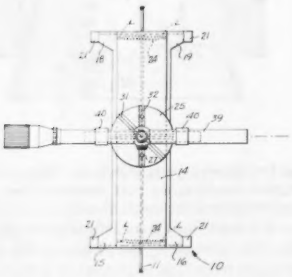
cal surface, and a bearing which permits the rotation of the conical surface to confirm proper alignment of the filter.

3,828,442
GOLF BALL SPHERICITY GAUGE
Henry W. Bernard, 8103 Rt. 53, Woodridge, Ill. 60515
Filed May 14, 1973, Ser. No. 360,154
Int. Cl. G01b *3/34; A63b 47/00*
U.S. Cl. 33—178 B **4 Claims**



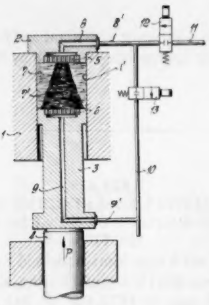
A gauge adapted to check the sphericity of golf balls which embodies a plate member having thereon a circular hole of a diameter slightly greater than the standarized diameter of a golf ball. About half of the wall of the circular hole is transversely concave to form a concave ball seat. The other half of the hole includes a symmetrically tapered portion providing a relatively sharp edged arc directly opposite the concave seat and preferably has closely spaced line markings on the tapered portion. The golf ball is placed in the hole on the concave seat and rotated about various axes thereof to check its sphericity by noting the constancy or variance in distance between the face of the ball and the sharp edge arc.

3,828,443
LINE SQUARE
Russell P. James, Avon Park, Fla., assignor to Thomas W. Bagwill and James A. Heim, both of Avon Park, Fla., part interest to each
Filed June 20, 1972, Ser. No. 264,438
Int. Cl. G01c *1/00*
U.S. Cl. 33—227 **10 Claims**



A line square for laying out a building; for a permanent lay out reference for large constructions of the type which require a considerable period of time such as bridges and piling work; for a factory machinery layout; for a grocery store, shelves and aisles layout; and for measuring inaccessible objects such as Stone Mountain illustrations and the like. A reference line is drawn taut across the area to be aligned, and an instrument support member is hand held on the line in alignment therewith. A theodolite, transit, or a simple angularly adjustable telescope is supported on the instrument support for movement along the line to align the instrument at any desired transverse angle to the line. The line may run horizontally, angularly, or vertically, as desired.

3,828,444
DEVICE FOR UNIFORMLY ADJUSTING THE MOISTURE CONTENT IN A COMPACTED MASS
Eugen Kopp, Stuttgart, Germany, assignor to Werner & Pleiderer, Stuttgart-Feuerbach, Germany
Filed June 1, 1973, Ser. No. 366,070
Claims priority, application Germany, July 19, 1972, 2235255
Int. Cl. F26b *19/00*
U.S. Cl. 34—70 **3 Claims**

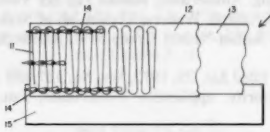


There is disclosed a device for dewatering a mass of nitrocellulose and replacing the water by alcohol so that the moisture content in the mass is adjusted for a uniformly distributed selected level. The device comprises a press, the cylinder of which is closed at one end by a removable cover mounting on its inner side a perforated plate and into which extends a power driven ram or plunger mounting on its face wall a second perforated plate. The mass of nitrocellulose to be processed is fed into the cylinder space between the two perforated plates. The perforated plate on the cover communicates with a conduit for feeding alcohol into the cylinder and the other perforated plate with a discharge conduit. These two conduits are interconnected by a conduit. A valve is included in the feed conduit upstream of the connection thereof to the discharge conduit and a second valve is included in the interconnecting conduit. First, alcohol is added via the feed conduit by opening the valve in the feed conduit and closing the valve in the interconnecting conduit. Then the valve in the feed conduit is closed and the valve in the interconnecting conduit is opened and, finally, the mass in the cylinder is compacted by activating the plunger. The water is pressed out during the compacting of the mass is discharged through the now open discharge conduit.

3,828,445
CLOTHES DRYER SEAL
Edward H. Smoot, Holcomb, N.Y., assignor to The Schlegel Manufacturing Company, Rochester, N.Y.
Filed Mar. 26, 1973, Ser. No. 345,077
Int. Cl. F26b *25/00*
U.S. Cl. 34—242 **13 Claims**

A seal between the housing and rotating drum of a clothes dryer is formed of a spring wire laid in a zig zag pattern with a wear material secured to the zig zag wire by rows of stitching

that also hold the wire loops together. The seal includes an air barrier and is mounted in the dryer in a generally conical



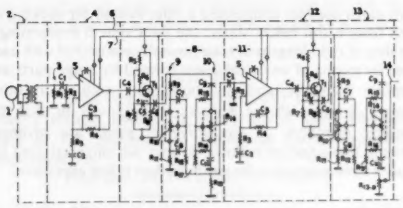
shape to engage a sealing edge at an oblique angle, and the spring wire is selected for pressing the wear surface against the sealing edge with a predetermined force.

3,828,446

PROCESS FOR ACCELERATING THE LEARNING OF LANGUAGES

Marc Jean-Christophe Noel Mandel, Paris, France, assignor to L'Institut De Researches Economiques Et Sociales, Paris, France

Filed Apr. 21, 1972, Ser. No. 246,323
Int. Cl. G09b *19/06*
U.S. Cl. 35—35 C **5 Claims**



Process and apparatus for accelerating learning of languages whereby the individual is made to acquire a phonation curve pertaining to the foreign language to be learned. The process comprises converting the phonation curve of the vocal emissions of the individual into electrical signals and, in a first stage of learning, modifying the phonation curve by a first selective filtering of the signals, so as to produce a first audition curve having an energy level which is roughly constant as a function of the frequency, this audition curve being heard by the individual whereby he acquires a transformed phonation curve similar to the audition curve obtained and, in a second stage of learning, modifying the transformed phonation curve in such manner as to obtain a second audition curve whose form reproduces the phonation curve of the language to be learned, the second audition curve being heard by the individual whereby he acquires the phonation curve of the language to be learned. A recording of vocal emissions spaced apart in time can be employed in addition in combination with reproducing means whereby the individual may repeat the recorded emissions in the intervals between recordings instead of reading from a text.

3,828,447

EDUCATIONAL DEVICE

David L. Larkin, 1200 W. Michigan Ave., Battle Creek, Mich. 49017

Filed Aug. 22, 1973, Ser. No. 390,397
Int. Cl. G09b *3/00*
U.S. Cl. 35—9 R **9 Claims**

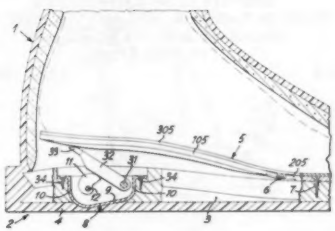
An educational device, comprising a base supporting a spindle and several discs mounted over the spindle, the lower disc having a plurality of recessed receptacles or sockets arranged in a circle concentric with the spindle, and having question indicia associated with each receptacle, and having on the upper surface of the disc verified answer indicia associated with each socket or receptacle, the second disc having a diameter sufficiently large to cover the verified answer indicia, and in an improved embodiment arranged to cover partially the receptacles, and a plurality of tablets such as discs each containing proposed answer indicia adapted to be inserted one into each receptacle.

3,828,448

SKI BOOT

De'Faveri Tron Antonio Leonildo, 287 Via Canova, Asolo, Italy

Filed Apr. 6, 1973, Ser. No. 348,619
Claims priority, application Italy, Apr. 8, 1972, 12590/72
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **10 Claims**



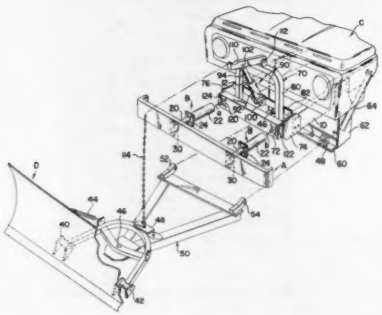
A rigid insole is hinged near its toe end to the outsole of a ski boot. In the heel region of the outsole a device is built-in, acting on the insole so as to lift and lower said insole with respect to the outsole. Manual control means are provided operable from the side of the boot to adjust the said device so as to provide for the desired height displacement of the insole.

3,828,449

PLOW BLADE LIFT FRAME AND METHOD OF USING SAME

Marc L. Miceli, Cleveland, Ohio, assignor to Meyer Products, Inc., Cleveland, Ohio

Filed Dec. 27, 1972, Ser. No. 318,897
Int. Cl. E01h 5/00; B60r 19/00
U.S. Cl. 37—41 4 Claims



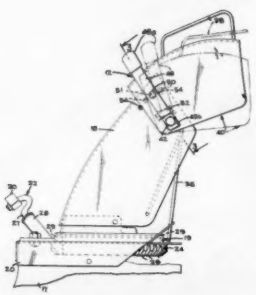
There is provided a snow plow lift frame for use on the front of a motor vehicle wherein the lift frame is provided with mounting arrangements for energy absorbing devices or units to be secured onto a bumper which is in turn attached to the plow blade lift frame.

3,828,450

SNOW CASTER DEFLECTOR CAP LOCKING DEVICE

David J. Boeck, Port Washington, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 7, 1972, Ser. No. 313,085
Int. Cl. E01h 5/00
U.S. Cl. 37—43 R 1 Claim



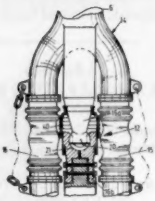
A snow caster deflector cap locking device for positively locking a snow deflector cap, in selected pivot positions, to a snow outlet duct surmounted by the cap. A spring lever mounted on one side of the cap carries a lock pin that extends through a slot in the cap for selective engagement in any one of several holes in the fixed duct to couple the cap to the fixed duct and thereby lock the cap in selected annular positions.

3,828,451

DUCTING SYSTEM FOR SUCTION DREDGERS HAVING PIVOTALLY CONNECTED TUBE LENGTHS

Jan de Koning, Amsterdam; Romke van der Veen, Jutphaas, and Tjako Aaldrik Wolters, Vianen, all of Netherlands, assignors to Ballast-Nedam Groep N.V., Amsterdam, Netherlands

Filed Jan. 29, 1973, Ser. No. 327,408
Claims priority, application Netherlands, Jan. 28, 1972, 7201145
Int. Cl. E02f 3/90
U.S. Cl. 37—58 6 Claims



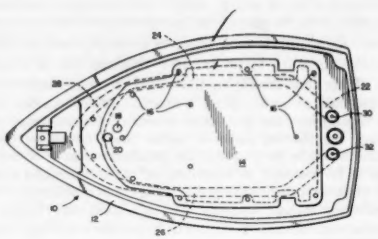
An earth dredger comprising a duct system for sucking up earth from a soil below water, the duct system comprising a plurality of rigid lengths of tube pivotally connected with each other by means of universal joints formed by hinge parts and coupling members and communicating with each other through flexible, elastic bellows is improved in that the coupling members of the universal joints are arranged between two adjacent bellows, so that the universal joint has smaller dimensions and the earth dredger is less expensive.

3,828,452

STEAM GENERATING SUBASSEMBLY FOR ELECTRIC IRON

John L. Eaton, Delanco, N.J., and Roger V. Eeckhout, Warminster, Pa., assignors to SCM Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 366,008
Int. Cl. D06f 75/06
U.S. Cl. 38—77.83 11 Claims

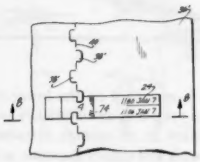


A sole plate of an electric iron containing two independent steam generating chambers separately generating a low velocity steam and a high velocity steam, respectively, and communicating with steam ports in the sole plate through a common outlet path. The low and high velocity steam generating chambers include a substantially linear passageway and a tortuous passageway, rspectively. A portion of a water receiving passage of the high velocity steam generating chamber and a portion of its tortuous passageway extend over a heating element embedded in the sole plate.

3,828,453
MEANS FOR ARRANGING DATA

Arthur M. Cohen, 2775 E. 12th St., No. 205, Brooklyn, N.Y. 11235

Division of Ser. No. 12,058, Feb. 17, 1970, abandoned. This application May 8, 1972, Ser. No. 251,526
Int. Cl. G09f 3/18
U.S. Cl. 40—19.5 4 Claims

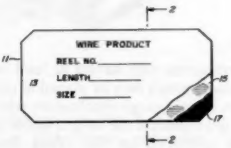


Means for arranging data by separating a data sheet along perforated lines into segments and securing said segments to a backing sheet in any desired arrangement. In one embodiment the data segments are provided with slits adapted to engage successive spaced tabs cut out along a fold line on the backing sheet. In a second embodiment the data sheet is provided with cut-out tabs which extend outwardly when the sheet is folded along a perforated fold line coterminous with the tab base. The tabs are inserted into slits cut out in the backing sheet.

3,828,454
DESTRUCTION RESISTANT TAG

Claude J. Hafner, Bethlehem, and Bruce D. Bush, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 13, 1972, Ser. No. 314,637
Int. Cl. G09f 3/02
U.S. Cl. 40—27 8 Claims



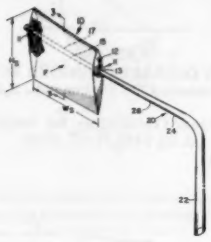
A weather and damage resistant tag is made from a lamination of thin soft metal sheet and cross woven fiberglass securely bonded together with an adhesive. Reinforcing patches composed of a lamination of thin sheet metal and a woven cloth backing are preferably secured to the tag with the metal portion of the patch uppermost surrounding any attachment orifices extending through the tag body.

3,828,455
SIGN AND SUPPORT APPARATUS

Ralph L. Bentley, 79 Dascomb Rd., Andover, Mass.

Continuation of Ser. No. 99,000, Dec. 17, 1970, abandoned. This application Jan. 17, 1973, Ser. No. 324,349
Int. Cl. G09f 7/18
U.S. Cl. 40—125 H 18 Claims

The sign has an aerodynamic cross-sectional shape, is supported along a center of gravity line and is normally prevented from rotating by a releasable support member that is coupled to the main sign support structure. The sign may be supported either horizontally or vertically along a hingeline that passes through the sign. Both the sign and support are fabricated with a light-weight core material surrounded by a stronger, relatively thin skin material. An optimum strength support is obtained by providing a circular cross-section in a plane that

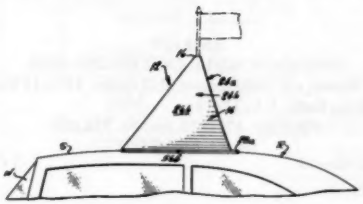


passes through the normal (perpendicular) force center on the sign and the support for each incremental section of the support.

3,828,456
CAR TOP ADVERTISING STAND

Ralph B. Rose, P.O. Box 727, Miami, Fla. 33070

Filed July 31, 1972, Ser. No. 276,595
Int. Cl. G09f 7/00
U.S. Cl. 40—129.C 1 Claim

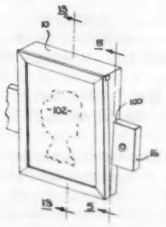


An advertising stand of paperboard construction adapted to be stored or packaged in flat paperboard blank form and to be erected to a pyramidal form for stationary support on the top surface of an automobile roof. Contact adhesive surfaces provide means for securing the advertising stand in erected pyramidal configuration and for securing the erected stand on an automobile top surface.

3,828,457
DECORATIVE WALL FIXTURE

Arthur E. Willis, 927 Circuit Dr., Roseville, Calif. 95678

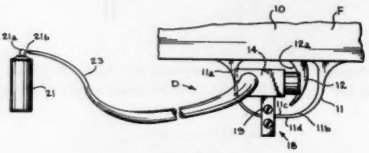
Filed Jan. 24, 1973, Ser. No. 326,462
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 6 Claims



A decorative fixture for hanging on a wall, having a baseboard in sections, slots in the baseboard, and supported

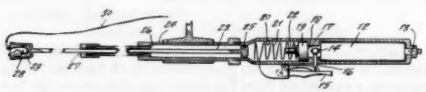
items having studs protruding therefrom, the studs simultaneously holding the segments of the baseboard together and supporting the supported item in cantilevered fashion from the baseboard.

3,828,458
REMOTELY OPERABLE TRIGGER ACTUATOR
John R. Skone-Palmer, 1735 Portsmouth, Suite 9, Houston, Tex. 77006
Filed June 11, 1973, Ser. No. 368,511
Int. Cl. F41c *19/06, 27/00*
U.S. Cl. 42—69 R **8 Claims**



A remotely operable trigger actuator including a body adapted for mounting between the trigger housing and the trigger of a rifle or the like; a piston slidably mounted in a bore in the body and a remotely located pressure source connected to the bore in order to displace the piston and to actuate the trigger.

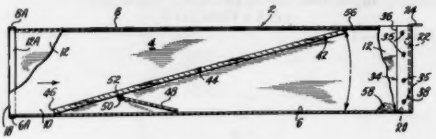
3,828,459
PNEUMATIC RIFLE CAST FISHING ROD
Miller Easom, c/o Miller Easom Mail Order, 110-113 Francis L. Blvd., Hollis, N.Y. 11429
Filed Apr. 17, 1973, Ser. No. 352,027
Int. Cl. A01k *91/02*
U.S. Cl. 43—19 **1 Claim**



An improved fishing rod for use by sports fishermen, the rod including a mechanism for casting the baited hook out into the water. The mechanism consists of an inflatable gas pressure can in the rod handle, gas being released by a trigger so that the released air quickly pushes a piston against a rear end of a rod that is slidable in a rifle-like barrel. A forward end of the rod extends from the barrel and has a cup in which is placed a baited hook attached to the fishing line so that when the rod is struck by the piston it thrusts the baited hook out into the water.

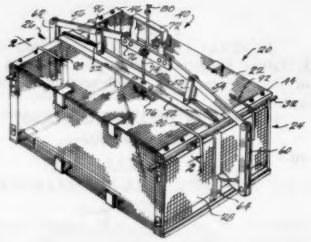
3,828,460
RODENT TRAP
Fritz Herman, 2848 N.E. 26 Court, Fort Lauderdale, Fla. 33306
Filed Mar. 7, 1973, Ser. No. 338,828
Int. Cl. A01m *23/08*
U.S. Cl. 43—61 **5 Claims**

An animal trap for rodents, comprising a sheet metal housing containing an elongated compartment, and a trap walk pivotally mounted in the compartment. The compartment is open at one end to allow entry of the animal, and closed at its other end by a slidable door. Bait is placed in the end of the compartment nearest the door. The trap walk is gravity balanced, so that, in its open position, its end nearest the entrance engages the bottom wall of the compartment and its other end engages the top wall of the compartment. The trap walk can be tilted to a closed position wherein said end nearest the entrance engages the top wall of the compartment and its other end engages the bottom wall of the compartment.



A swing-type lock is mounted on the lower side of the trap walk and includes a prop that automatically swings by gravity to an upright position as an animal, attracted by the bait, moves up the trap walk and causes the same to tilt to its closed position, thereby entrapping the animal.

3,828,461
CRAB TRAP
Grant W. Roberts, 19 E. Center St., Folly Beach, S.C. 29439
Filed Dec. 8, 1972, Ser. No. 313,541
Int. Cl. A01k *69/08*
U.S. Cl. 43—102 **6 Claims**

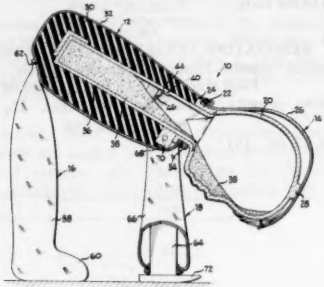


A porous crustacean trap having at least one pair of opposed hinged doors which may be placed in either an open or closed position by a linkage mechanism which is mounted atop the trap and connects the hinged doors to a lifting line. When tension is placed on the lifting line, the linkage mechanism operates to close the hinged doors, but when the line is not in tension, flexible straps or the like provide the necessary force to overcome the weight of the hinged doors and open the hinged doors to permit crabs and other marine animals to enter. The linkage mechanism is pivotally hinged to enable the operator to selectively open either end to remove crabs or other crustaceans from one end while preventing their exit from the other.

3,828,462
ANIMATED TOY
Howard J. Morrison, Deerfield, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 21, 1972, Ser. No. 317,278
Int. Cl. A63h *11/08*
U.S. Cl. 46—41 **2 Claims**

An animated toy in the form of a doll having an elongated body portion and supporting arm portions and leg portions connected to the body portion so that the ends of the arm and leg portions may be positioned on a supporting surface and maintain the body portion in an elevated forwardly-downwardly inclined position. A fluent granular material is disposed within an interior compartment inside the body por-

tion of the doll whereby the granular material flows forwardly to shift the center of gravity of the doll forwardly. The granular material flows relatively slowly past a baffle plate to cause the doll to slowly tumble over in a generally forward direction, under gravity.



3,828,463

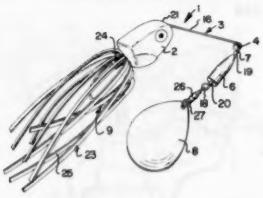
DROP SPIN FISHING LURE

George S. Perrin, Fort Smith, Ark., assignor to Plastic Research and Development Corporation, Fort Smith, Ark.

Filed Feb. 26, 1973, Ser. No. 336,038

Int. Cl. A01k *85/00*

U.S. Cl. 43—42.11 **7 Claims**



An artificial fishing lure has a hollow or floater body member with a line shank extending forwardly and downwardly therefrom and having an eye for connection of a fishing line. A weight member is mounted on a weight support shaft extending rearwardly from the eye of the line shank below and at an angle relative to the body member for a desired angular relation ahd having a spinner or action member mounted on a rear end of the weight support shaft. A hook shank extends rearwardly from the hollow body member and has a down-turned portion terminating in a barb at the free end thereof, the lure having a suitable skirt or the like on the body and extending around the hook.

3,828,464

DISPENSING APPARATUS FOR APPLYING EXTERMINATING AND PRESERVATIVE COMPOSITIONS

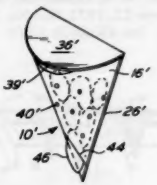
Franklin Peace, c/o National Volume Sales Corp., 1024 Cottman Ave., Philadelphia, Pa. 19111

Continuation-in-part of Ser. No. 84,094, Oct. 26, 1970, Pat. No. 3,692,469. This application May 25, 1972, Ser. No. 257,040

Int. Cl. A01m *25/00*

U.S. Cl. 43—131 **7 Claims**

A container is provided for a wood-penetrating preservative or exterminating composition for insects and rodents. Any preservative composition in the container contacts a wood member to be treated, and penetrates into it. In each embodiment, the composition is dispensed from the container by gravity feed. Adhesive material or conventional fasteners may be used to fasten the container to a member or to a support.



3,828,465

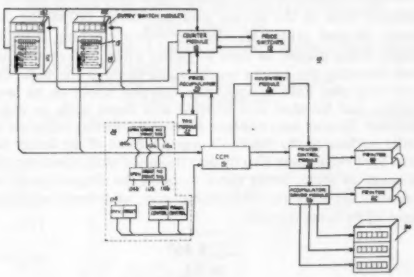
DIRECT-ENTRY CASH REGISTER

Frederick A. Buuck, 421 W. Maple Grove, Fort Wayne, Ind. 46807, and Robert E. Fritsch, 5133 Forest Grove Dr., Fort Wayne, Ind. 46815

Filed Feb. 7, 1973, Ser. No. 330,308

Int. Cl. G06c *29/00*; **G07g** *1/00*

U.S. Cl. 235—6 **43 Claims**

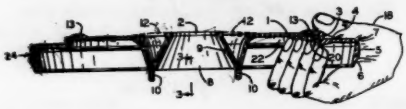


A direct-entry cash register for totaling the prices of a selected quantity of a predetermined plurality of items offered for sale, the combination comprising item switch means for selecting a quantity of each of one of a predetermined plurality of items, the item switch means including a plurality of line-item switches, there being one item switch for each item offered for sale and each item switch being selectively operable between a plurality of discrete positions. Each position of the switches corresponds to a different selected quantity of the associated item. Means are provided for programming into the cash register the price of each item offered for sale, the programming means including a plurality of groups of manually settable price switches, each group of switches being operable between a multiplicity of discrete positions corresponding to a multiplicity of prices. There is one group of price switches for each item offered for sale. A first indicia means is associated with each item switch for identifying the item corresponding thereto and second indicia means are operatively coupled to each of the item switches for automatically and visibly indicating the selected quantity of the item. A computing means is provided for automatically interrogating the item switch means and the programming means and totaling the prices and quantities of all selected items. A display means is operatively coupled to the computing means for displaying the total price of the items sold in a single transaction.

ERRATUM

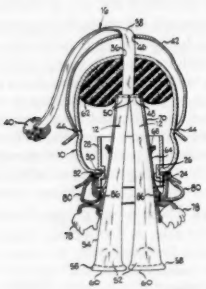
For Class 46—41 see:
Patent No. 3,828,462

3,828,466
FLYING SAUCER
Ervin D. Geiger, R.R. No. 4, Albion, Ind. 46701
Filed June 22, 1972, Ser. No. 265,119
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 D **4 Claims**



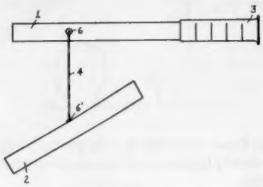
A gyro-aerodynamic saucer shaped throwing or projecting implement. Consisting of a single or plurality of inter boundary rings projecting down from relative flat plateau upper outer surfaces, said rings may be accompanyed by raised dimples which make for more comfortable hand grip, and better control of the saucer as it is thrown with a wrist snaping action. Said rings also exert a controlled drag on the upper surface of the saucer to help prevent rolloff or rollover. Also consisting of an outer ring with a flatter cone-shaped lower foresurface to act as lift, simular to flaps on an aircraft, which also tends to prevent rollover, yet cause a more stable flight with a much thinner overall thickness of the saucer, thereby reducing the overall aerodynamic drag during flight. Saucer also having an optional hole in the center with downward projecting cone center shaped center section, for either catching it on the finger of the player, or used in games where stakes are used, thus throwing the saucer on the stake through the hole. Said cone may also have downward projecting hooks on its lower surface and be shot and whirled into flight with an elastic member. Saucer may contain a lower projecting ridge on the under surface of the plateau's upper surface of the larger saucers. Said ridges may also be accompanied with raised dimples adjacent to them, being there to hook the finger tips of the thrower, for a more comfortable grip, and more controled flight while being thrown.

3,828,467
DOLL
Bette M. Kaelin, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed July 16, 1973, Ser. No. 379,854
Int. Cl. A63h *13/00*
U.S. Cl. 46—115 **8 Claims**



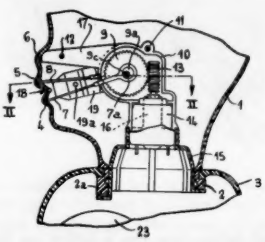
A toy growing doll, animal or the like, including leg defining members of fixed length. A body is provided, which body has an interior cavity and a downwardly facing opening for receipt of the upper ends of the legs so that the same may be moved into the cavity. An elongated element is secured to the leg members and extends through the body so as to be graspable to move the leg members into the cavity. A flexible covering which can define either apparel or a further body portion is secured to the legs and to the body such that the same will move with the leg members as they are moved partially into the cavity. A unique retaining force structure is employed for maintaining the legs in any particular position within the opening to the body.

3,828,468
RESONATING TETHERED TUBULAR MEMBERS
Arnaldo Palumbo, Milano, Via Faenza 10, Italy
Filed Mar. 12, 1973, Ser. No. 340,007
Claims priority, application Italy, Jan. 31, 1973, 20567
Int. Cl. A63h *5/00*
U.S. Cl. 46—191 **7 Claims**



Toy, including two cylindrical tubular sections, connected to each other by means of a string, which may emanate sounds and create particular optical and chromatic effects.

3,828,469
HEAD WITH LIPS MOVABLE BY RODS ECCENTRICALLY MOUNTED TO A WHEEL
Germain Giroud, Moingt-par-Montbrison, Loire, France
Filed Jan. 26, 1973, Ser. No. 326,838
Claims priority, application France, Feb. 11, 1972, 72.5441
Int. Cl. A63h *13/02*
U.S. Cl. 46—245 **8 Claims**



A head for a doll or figurine, having a mouth including two lips each coupled to an operating rod. A wheel with eccentric studs mounts and drives each rod to impart a reciprocating displacement to the lips, such displacements being staggered, to simulate lip movement as in talking. An electric motor drives the wheel. A circuit breaker may be positioned in the head near an opening at the mouth so that an object inserted therein will turn off the electric motor.

3,828,470
MUSHROOM SPAWN AND METHOD OF MAKING SAME
Benjamin B. Stoller, Santa Cruz, Calif., assignor to Stoller Research Co., Santa Cruz, Calif.
Continuation-in-part of Ser. No. 79,265, Oct. 8, 1970, abandoned. This application June 14, 1971, Ser. No. 153,032
Int. Cl. C05g *1/00*
U.S. Cl. 47—1.4 **11 Claims**

Mushroom spawn and the method of making same wherein the substrate is prepared with finely ground feedstuffs. Flocculating agents and trituration permit the finely granular mixture to serve as a substrate without becoming a sticky paste or cement-like product. The finely ground substrate provides for increased and faster mycelial growth throughout the compost, and for greater mushroom yield from the use of a particular amount of spawn.

3,828,471

AGRICULTURAL MULCH FILMS ADAPTED FOR PLANT PENETRATION

Bernard Fornelius Anderson, West Chester, Pa., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 60,724, Aug. 3, 1970, Pat. No. 3,673,134. This application Feb. 25, 1972, Ser. No. 229,488

Int. Cl. A01q 7/00; B44d 5/00

U.S. Cl. 47—9 5 Claims

Films prepared from ethylene polymer-hydrocarbon elastomer blends are coated with petroleum derived rubber processing and extender oils. These films degrade more rapidly and provide for easier plant penetration than untreated films.

3,828,472

FLOWER ARRANGING ELEMENT

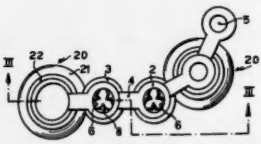
Johannes Anthonius Vermeulen, Herwijnen, and Bernardus Adrianus Van Etten, Delft, both of Netherlands, assignors to Johannes Anthonius Vermeulen, Waaldijk, Herwijnen, Netherlands

Filed July 13, 1972, Ser. No. 271,528

Claims priority, application Netherlands, July 16, 1971, 7109879

Int. Cl. A01g 5/00

U.S. Cl. 47—41 4 Claims



A flower arranging element according to the invention is provided by a body of stiff resilient plastics material consisting of two outwardly cylindrical members being joined to each other with their axes in parallel relationship by a linking piece lying in a plane extending at right angles to the axes of the members, one of the members having therein an open ended cylindrical cavity narrowing towards its open end and the other member being in the form of a cylindrical ring fitting closely around the cavity containing member of another element. The flower arranging element includes a flower stem holder being provided at its bottom end with a ball-shaped part capable of tight insertion into the cavity of the cavity carrying member and the flower stem holder being capable of receiving and supporting flower stems of different diameters.

3,828,473

METHOD, CONTAINER AND TOOL FOR GROWING AND PLANTING GRAPES AND OTHER DEEP AND/OR TAP ROOTED PLANTS

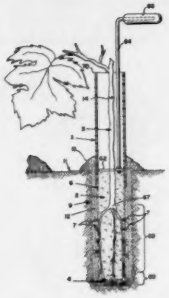
Dennison H. Morey, 555 Irwin Ln., Santa Rosa, Calif. 95401

Filed Jan. 8, 1973, Ser. No. 321,573

Int. Cl. A01c 5/02; A01g 9/02

U.S. Cl. 47—58 8 Claims

A method for growing deep and/or tap rooted plants such as grapes and many shade trees in a growing container which is foldable, longitudinally ribbed or grooved and open at both ends. After the plant is ready for replanting in cultivated soil a special C-shaped tool pushes the plant along with the growing medium intact through the bottom of the container into a prepared hole. The container is left partially buried in the ground and the elevated portion serves to shade the graft union and protect it from certain worms, insects, rodents and mechanical damage.



3,828,474

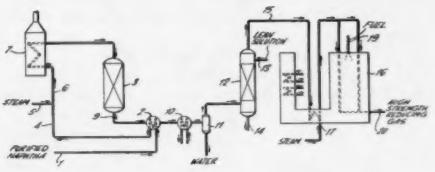
PROCESS FOR PRODUCING HIGH STRENGTH REDUCING GAS

Orlando J. Quartulli, London, England, assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 1, 1973, Ser. No. 328,805

Int. Cl. C01b 2/14

U.S. Cl. 48—214 13 Claims



This invention provides a process for producing a high strength reducing gas suitable for reducing metallic ores such as iron ore. The process is a multi-step process using a C_3 to C_{15} hydrocarbon such as liquid naphtha as the starting material.

The first step of the process comprises gasifying the hydrocarbon by passing a preheated mixture of the hydrocarbon and steam through a bed of a reforming catalyst to produce a gas consisting essentially of methane, hydrogen, carbon oxides and steam. Carbon dioxide is then removed from this gas mixture and the resulting gas is steam reformed in the presence of a reforming catalyst to produce reducing gas comprising hydrogen and carbon monoxide.

3,828,475

GATE OPENER

Perry W. Eblen, 111 High St., Oakland, Iowa 51560

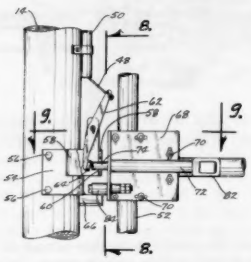
Filed Oct. 6, 1972, Ser. No. 295,569

Int. Cl. E05c 17/08; E05b 65/06

U.S. Cl. 49—394 8 Claims

A device for opening and closing a gate comprising a normally closed latch means at the free end of the gate and a spring means at the other end of the gate for returning the gate to its closed position. One form of the latch means comprising a latching arm which is pivotally secured to the post adjacent the free end of the gate and which may be moved between locked and unlocked positions. A bar means extends from the free end of the gate for engagement with the latching member

to maintain the gate in its closed position. An elongated flexible cable is secured to the latching member and extends upwardly therefrom to a location adjacent the approach area of the gate to permit a person on a tractor or the like to grasp the cable and to move the latching member to its unlocked position. The tractor is then driven against the gate which causes



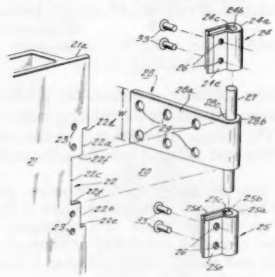
the gate to swing open as the tractor is driven thereby. Once the tractor has disengaged from the gate, the spring means causes the gate to return to its closed position. The modified form of the latch means comprises a spring loaded plunger element which is secured to the free end of the gate and which is received by an opening in a bracket secured to a post adjacent the free end of the gate.

3,828,476

HINGE ASSEMBLY

Paul Tenenbaum, Glenside, and Howard Yurgevich, Levittown, both of Pa., assignors to Strick Corporation, Fairless Hills, Pa.

Filed June 29, 1972, Ser. No. 267,699
Int. Cl. E05d *9/00*; **E06b** *3/00*
U.S. Cl. 49—501 **9 Claims**



A hinge assembly for doors and the like in which the door frame forms an integral part of the hinge assembly. The door frame is provided with a cutout of a predetermined shape wherein two inwardly spaced edges of the cutout act as mounting surfaces for the hinge butts and collectively cooperate with the hinge butts to secure the hinge pin. The remaining cutout portion, positioned between the aforementioned spaced cutout portions and extending inwardly therefrom provides clearance for the hinge strap. The protruding edge of the door frame containing the cutouts further provides protection against damage for the edge of the door carrying the hinge straps. The transverse edges of the spaced cutout portions further serves as the means for retaining the upper and lower ends of the hinge pin.

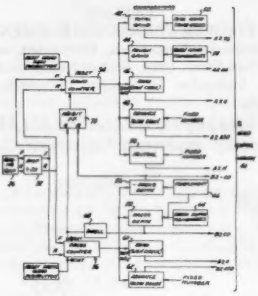
The employment of the special cutout eliminates the need for additional mechanical means such as welding, cotter pins or threaded hinge pins and cooperating trapped nuts normally employed in conventional systems to mount the hinge pin to the hinge butts.

3,828,477

CLOSED LOOP GRINDER INFEED CONTROL SYSTEM W/AUTOMATIC COMPENSATION FOR WHEEL DIAMETER CHANGES DUE TO DRESSING OPERATIONS

Norman Ray Sanford, Piqua; Alan Dale Wainscott, and Billy Keith Skelton, both of Dayton, all of Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed May 7, 1973, Ser. No. 357,755
Int. Cl. B24b *49/18, 49/10, 51/00*
U.S. Cl. 51—5 **6 Claims**



An infeed control system for a grinding machine is disclosed which includes a distance transducer generating trains of electrical pulses in response to wheelhead movement in either direction on the infeed slide, and a first and second up-down counter receiving and counting these electrical pulses generated, the first of these counters counting up in response to pulses generated by grinding infeed movement, the second counting up in response to pulses generated in response to dressing infeed movement. A series of comparator networks compares these counts with preset values set in the series of comparators, and generates sequencing control signals there from at points in the infeed motions of the wheelhead corresponding to the preset values. To compensate for the effect of the changes in wheel diameter due to dressing operations, an arrangement is provided which inhibits the counting up of the counter responding to electrical pulses generated by grinding infeed motion occurring after each dressing operation for a count total equal to the dressing depth.

3,828,478

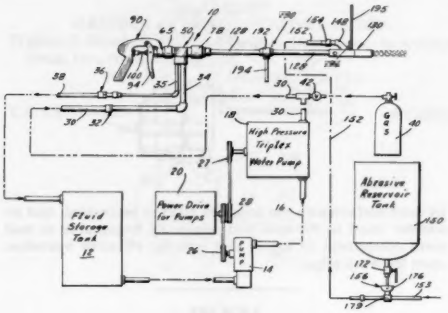
FLUID-JET-ABRASIVE DEVICE AND SYSTEM

Edwin G. Bemis, 1357 La Serena Dr., Brea, Calif. 92621

Filed June 25, 1973, Ser. No. 373,467
Int. Cl. B24c *7/00*
U.S. Cl. 51—11 **18 Claims**

A fluid-jet-abrasive device and system according to the present invention comprises a fluid-jet gun having a trigger means adapted to operate a pressure-control valve, to allow fluid to flow therethrough and pass out of the spray-nozzled distal end of the gun under extremely high pressures and velocities, the fluid under pressure being supplied through an interconnected flow system having a water-tank reservoir, a pumping unit being coupled at one end thereof to the water tank and at the opposite end to the pressure inlet of the gun by means of a recirculating conduit system. The gun includes a separate inlet port through which various types of abrasive

materials are passed and mixed with the fluid to be sprayed under high pressure, the abrasive material being stored in a



tank having a material-flow regulator operably attached thereto for automatically controlling the feeding of the abrasives to the gun.

3,828,479

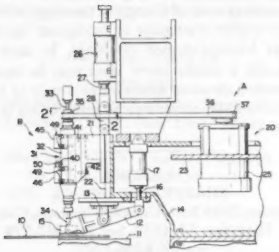
MULTIPLE SPINDLE CLUSTER FOR SHEET GLASS CORE DRILLING MACHINE

Carle W. Highberg, Sylvania, and George R. Roesch, Sylvania Twp., both of Ohio, assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed May 17, 1973, Ser. No. 361,268

Int. Cl. B23b *41/00*; **B24b** *7/00*; **B28b** *1/02*

U.S. Cl. 51—81 R **8 Claims**



A multiple spindle cluster assembly for use in association with a core drilling machine to drill a plurality of holes simultaneously in a glass sheet. A pair of such identical cluster assemblies are located on opposite sides of the sheet with the respective pairs of opposed spindles axially aligned. The respective drills are fed alternatingly into the sheet to a depth less than the thickness of the glass. Each assembly includes an adapter and at least one spindle clamp attachable to the adapter to support the spindles in parallel alignment and in a predetermined pattern and spacing relative to one another. The spindles are adjustable in an axial direction relative to one another to position the drill tips in a common plane parallel to the plane of the glass sheet.

3,828,480

TIP SHARPENING MACHINE FOR DRILLS, ESPECIALLY TWIST DRILLS

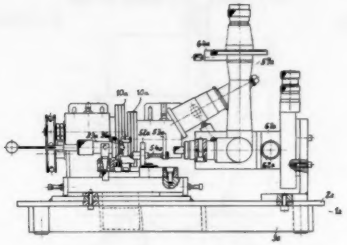
Georg Ernst Weng, Ravensburg, Germany, assignor to Haivera Probst Kommanditgesellschaft Hartmetall-Werkzeugfabrik Ravensburg, Ravensburg, Germany

Filed Feb. 15, 1973, Ser. No. 332,616

Claims priority, application Germany, Feb. 17, 1972, 7205920; Jan. 15, 1973, 7301349

Int. Cl. B24b *7/00*; **B21k** *3/10*

U.S. Cl. 51—85 R **12 Claims**



A machine for sharpening drills, especially twist drills, in which a pair of grinding discs are mounted in adjacent relation and rotate on respective axes which are parallel and offset so the discs define a re-entrant grinding throat. A drill holder is provided to support a drill so the point end can be introduced into the grinding throat at an angle. The drill holder includes means to adjust the drill axially and angularly and can move the drill from grinding position to an inspection position wherein a microscope is located and which includes hairline means for precise adjustment of the drill in the drill holder.

3,828,481

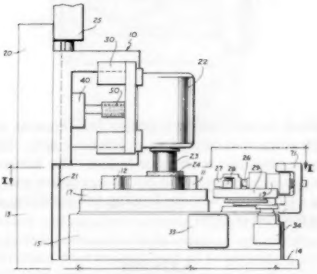
CAM CONTROLLED MACHINE FOR GRINDING A NON-CIRCULAR SURFACE

Herbert Rudolf Uhtenwoldt, Worcester, Mass., assignor to Cincinnati Milacron-Heald Corp., Worcester, England

Filed May 23, 1973, Ser. No. 362,957

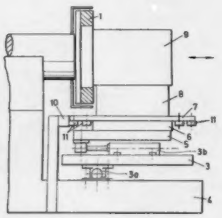
Int. Cl. B24b *7/04*, *17/00*

U.S. Cl. 51—101 R **10 Claims**



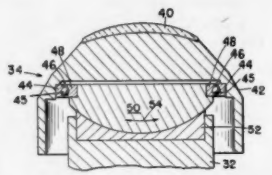
A grinding machine for forming a non-circular surface on a workpiece, the machine having means for preventing misformation of the surface due to lack of normalcy between a master cam and its cam follower.

3,828,482
FINISHING MACHINES WITH A WORKPIECE CONVEYING SYSTEM
James Thomas Shaw, and Raymond Percy Arthur Lilley, both of Peterborough, England, assignors to Baker Perkins Limited, Peterborough, England
Filed Sept. 21, 1972, Ser. No. 291,078
Claims priority, application Great Britain, Oct. 6, 1971, 46542/71
Int. Cl. B24b *7/06*
U.S. Cl. 51—121 **11 Claims**



A snag or flash cutting or grinding machine has a stationary cutting or grinding head and a system for conveying a workpiece around a closed circuit having an operative run passing the cutting or grinding head. Apparatus is provided for turning the workpiece if required during inoperative run portions of the circuit so that successive workpiece faces can be presented to the cutting or grinding head during successive circuits and a guide system ensures correct alignment of each face relative to the cutting or grinding head.

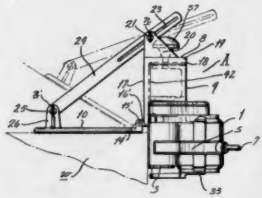
3,828,483
OPTICAL LENS GENERATING MACHINE HAVING SPHERICAL BEARING WORKPIECE HOLDER
Raymond T. Blum, Pittsford, and George J. Laughman, Perinton, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 10, 1972, Ser. No. 296,486
Int. Cl. B24b *9/14, 41/04*
U.S. Cl. 51—124 L **3 Claims**



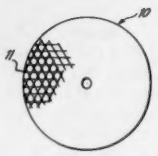
An optical lens surfacing machine for separate operation upon each refractive side of an ophthalmic lens. The lens is carried by a pivotable workpiece holder. The holder permits total lens surface engagement by an operation tool, thereby providing a single machine for lapping and polishing a lens in a minimum number of steps.

3,828,484
POWER TOOL ACCESSORY
Charles H. Baechle, 7701 Telegraph Rd., St. Louis, Mo. 63129
Filed Aug. 28, 1972, Ser. No. 284,054
Int. Cl. B24b *23/06, 23/08*
U.S. Cl. 51—170 EB **5 Claims**

An accessory for a portable power tool, such as a sander, for supporting same with relationship to the work for presentation in preselected attitude thereto, said accessory comprising a main component positionable upon a major surface of the work, and being adjustable to accommodate the angle formed by such surface with the adjacent edge to be treated, and an adapter fixed to the tool and selectedly engageable to said main component to locate said tool for effective operation upon the work edge.

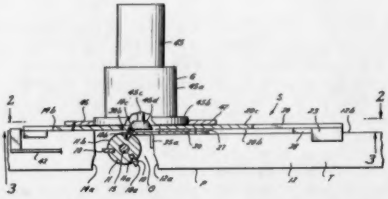


3,828,485
REINFORCED ABRASIVE WHEELS
Charles A. McClure, R.D. 2, Box 290, Malvern, Pa. 19355
Continuation-in-part of Ser. No. 188,338, Oct. 12, 1971, Pat. No. 3,716,950. This application Feb. 1, 1973, Ser. No. 328,748The portion of the term of this patent subsequent to Feb. 20, 1990, has been disclaimed.
Int. Cl. B24d *5/08*
U.S. Cl. 51—206 NF **10 Claims**



Abrasive cut-off wheels are reinforced by one or more disc-like layers of open-mesh triaxial fabric, made of glass or other suitable yarn. The mesh openings comprise two or more different sets, such as a set of triangular openings of intermediate size, a set of smaller triangular or hexagonal openings, and a set of larger lozenge-shaped openings. In such reinforced abrasive wheels, a simple fabric layer may be sandwiched by layers of bonded abrasive material, or a pair of fabric layers may sandwich and be bonded to an intervening layer of abrasive material.

3,828,486
SHARPENING DEVICE
Henry A. Bonke, 2605 Bott, Colorado Springs, Colo. 80904
Filed Nov. 17, 1972, Ser. No. 307,578
Int. Cl. B24b *19/00*
U.S. Cl. 51—249 **8 Claims**



Apparatus for sharpening the shaft mounted blades of a planar-jointer including a base member for mounting onto the

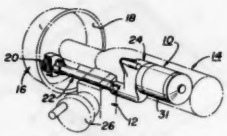
planar-jointer table over the blades thereof and positioning means mounted onto the base member for positioning the base member and a blade of the planar-jointer for sharpening.

3,828,487

GRINDER ATTACHMENT FOR A LATHE

Wallace F. Mitchell, Arlington Heights, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Dec. 1, 1972, Ser. No. 311,124
Int. Cl. B24b *19/26*
U.S. Cl. 51—259 **6 Claims**



A precision finishing tool for use in turning brake drums incorporates a plurality of different length quills and means for interchanging the quills for use with different sizes of rotors.

3,828,488

METHOD OF MAINTAINING THE FLUID PERMEABILITY OF A FIRED ALUMINA, BALL CLAY AND TALC FLUID-RELEASE MOLD

Rudolph A. Skriletz, Marysville, and Virgil D. Kendall, Springfield, both of Ohio, assignors to Wallace-Murray Corporation, New York, N.Y.

Division of Ser. No. 346,291, March 30, 1973. This application May 15, 1973, Ser. No. 360,589
Int. Cl. B24c *1/00*; **B24b** *1/00*
U.S. Cl. 51—319 **4 Claims**

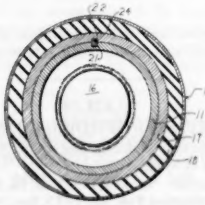
A method of maintaining the fluid permeability of a fired ceramic mold body comprising at least 70 percent alumina, up to 15 percent ball clay and up to 15 percent talc wherein accumulated colloidal material which clogs the surface of the mold face is removed by abrading the mold face. The preferred manner of carrying out the invention is to sandblast the mold face.

3,828,489

MANDREL FOR SANDING DRUMS

Donnell H. Culley, Jr., P.O. Box 1581, Morristown, Tenn. 37814

Filed Sept. 24, 1973, Ser. No. 400,418
Int. Cl. B24d *9/02*; **B65h** *75/18*
U.S. Cl. 51—375 **7 Claims**



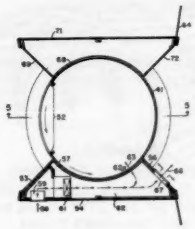
A mandrel for supporting large diameter sanding drums so that they are concentric and balanced. The structure comprises an inner cylinder-like member having heads in each end to which are secured supporting shafts. Slidably surrounding the inner member are metal cylinders having secured to their outer surfaces sleeves of rubber or the like. Spacer washers are interposed between the adjacent ends of the metal cylinders. Means is provided to exert compressive force on the rubber members, from each end of the mandrel, thus to cause the rubber sleeves to distort radially, frictionally securing the sanding drum to the mandrel.

3,828,490

ACCESS CLOSURE FOR AN AIR INFLATED STRUCTURE

William L. Duquette, 6170 Thornton Ave., Newark, Calif. 94560

Filed Dec. 14, 1972, Ser. No. 315,152
Int. Cl. E04b *1/34*; **E04g** *11/04*
U.S. Cl. 52—2 **2 Claims**



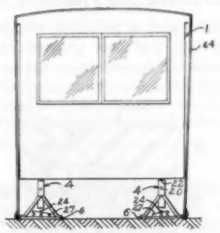
An access closure for an air inflated structure consisting briefly of a platform, a relatively impervious chamber having a rotatable wall formed with an access opening, and optional means for pre-pressurizing the chamber to maintain a relatively constant air pressure within the inflated structure during movement of persons and material in and out of the structure.

3,828,491

COMBINATION JACK, ANCHOR AND HOLD-DOWN APPARATUS

Billy W. Koon, P.O. Box 166, and Alfred Glenn Sylvester, 412 E. Hamilton, both of Stamford, Tex. 79553

Filed July 2, 1973, Ser. No. 375,894
Int. Cl. E04b *7/00*; **E02d** *5/74*
U.S. Cl. 52—23 **9 Claims**



An adjustable support member and a dual anchor for mobile homes and other instrumentalities which require leveling by jack means and require anchoring against being moved off of the support members by high winds or other hazards. The present structure is so constructed as to provide a screw jack which bindingly and detachably engages the lower faces of beams which screw jack is so constructed as to enable the leveling of the mobile home or the like. Further an earth engaging anchor extends up through the base of the jack, and the base of the jack is secured thereto, as by a wedge, so as to prevent relative movement between the frame of the mobile home, or the like, and the terrain. A still further anchor for the mobile home or the like is provided by a band which passes

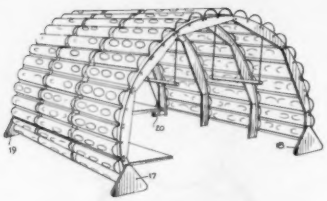
over the mobile home or the like, which band is secured to the base of the jacks.

3,828,492

STRUCTURAL MODULE

Louis F. Schliemann, and Jerome E. Borgos, both of 418 W. 25th St., New York, N.Y. 10001

Filed May 6, 1970, Ser. No. 35,029
Int. Cl. E04b *1/32*
U.S. Cl. 52—36 **4 Claims**



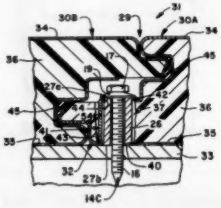
A structural module comprising a pair of parallel arcuate beams each having a side flange and a top flange, and a corrugated facing sheet marginally secured to the top flanges of the beams, the ends of the sheet being bent downwardly to form connecting flanges. Two or more modules may be interconnected at their adjoining connecting flanges as well as by coupling plates straddling the modules at their juncture and attached to the side flanges thereof. Each module constitutes a segment of a circular cylinder so that by combining such segments, one may erect caves, enclosures, dividers and other useful structures.

3,828,493

EXPLOSION PRESSURES RELEASE FASTENER

Alexander G. Vezmar, Leetsdale, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

. This application Feb. 14, 1973, Ser. No. 332,406
Int. Cl. EO4c *2/00*; **F16b** *29/00, 35/04*
U.S. Cl. 52—1 **6 Claims**



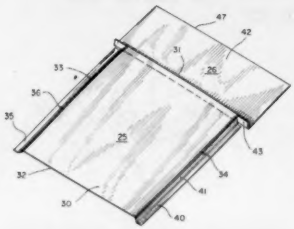
An explosion release fastener for releasably securing wall elements, such as, facing sheets or double-skin panels, to a building structural framework. In the event of an explosion within the building, an exteriorly presented deformable washer is forced over the fastener head thereby releasing the wall element. Means is provided for maintaining the fastener receiving opening in the wall element concentrically aligned with the fastener head to facilitate release of the wall element.

3,828,494

ROOF JACK

Philip F. Uhrhane, Edgewood Park, W. Va., and Donald L. Day, Guysville, Ohio, assignors to Textron Inc., Providence, R.I.

Filed June 13, 1973, Ser. No. 369,449
Int. Cl. E04d *13/04*
U.S. Cl. 52—15 **6 Claims**



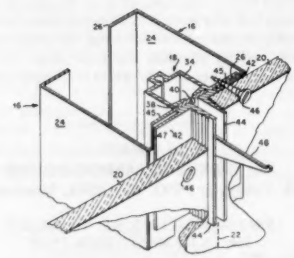
A roof jack for a vent or a stack, the jack having a channel which receives water flowing down the roof and diverts the same around the stack or vent so that the water continually flows and no puddles are formed.

3,828,495

PARTITION WITH CONCEALED SLOTTED STANDARD

William J. H. Law, 271 Madison Ave., Port Chester, N.Y. 10016

Filed Jan. 2, 1973, Ser. No. 320,270
Int. Cl. A47g *29/02*
U.S. Cl. 52—36 **4 Claims**



The invention relates to the installation of concealed slotted standards in partitions for supporting shelving and the like.

3,828,496

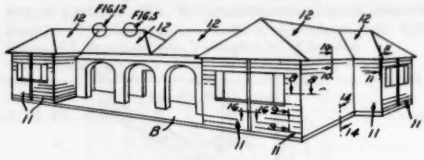
PREFABRICATED BUILDING CONSTRUCTION

Gino S. Testaguzza, Oxford, and Paul A. Perini, Madison Heights, both of Mich.

Continuation of Ser. No. 115,179, Feb. 16, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,923
Int. Cl. E04b *1/54*
U.S. Cl. 52—91 **4 Claims**

A prefabricated building construction comprising a base, a plurality of wall units and a plurality of roof units. Each of the wall units comprises at least one panel with a hollow vertical opening therein. Each roof unit comprises at least one panel with a hollow portion therein. When the wall units and roof units are placed in position, the hollow portions of the wall

units and the hollow portions of the roof units are in communication and concrete or other settable material is poured



through the openings to provide a unitary structure. Reinforcing rods and the like can be positioned in the communicating hollow portions.

3,828,497

GROUND ANCHORS

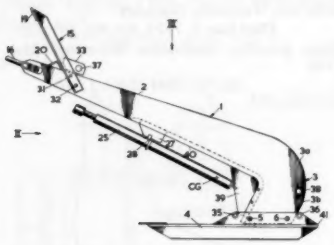
William Anthony Vinycomb, Lymington, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 26, 1973, Ser. No. 326,688

Claims priority, application Great Britain, Jan. 27, 1972, 3920/72

Int. Cl. E02d *5/80*

U.S. Cl. 52—155 **9 Claims**



A ground anchor which is self-righting and self-engaging under the action of the anchor rope, comprises a shank with an oblique fluke plate at one end and a self-righting device at the other. The self-righting device has a plurality of arms fixed to and projecting laterally from the shank, arranged such that by pulling on the anchor rope when the anchor is disorientated at least one of the arms engages the ground and reacts with the ground to correct the orientation of the anchor for correct ground engagement of the fluke plate. The self-righting device can include three arms, one arm being perpendicular to the other two arms which are in line, on either side of the shank.

3,828,498

METHOD OF STABILIZING A COMPARATIVELY FLAT ROOFED STRUCTURE AGAINST WIND

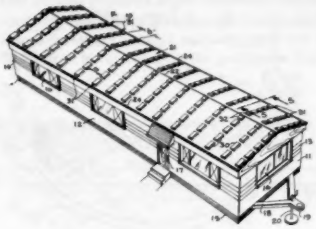
Robert A. Jones, 5505 Valmont, No. 308, Boulder, Colo. 80302

Filed Oct. 18, 1972, Ser. No. 298,472

Int. Cl. E04h *9/00*; **E04b** *1/62*

U.S. Cl. 52—173 **5 Claims**

A method for stabilizing elongated, comparatively flat roofed structures against wind forces by affixing concrete blocks to the roof in a desired regular arrangement to disturb and break up the normal airflow pattern across the surface of the roof. The blocks are positioned to form a plurality of transverse rows across the roof surface of the structure. The individual rows are spaced in a longitudinal direction along the



length of the structure. Adhesive material is used to affix the blocks to the surface to prevent movement or shifting from the desired position.

3,828,499

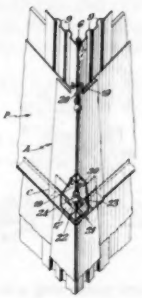
CORNER ASSEMBLY FOR EXTERIOR SIDING

Robert Leddy, 389 Mayer Ct., Ridgefield, N.J. 07657

Filed Jan. 3, 1972, Ser. No. 214,776

Int. Cl. E04b *1/00, 7/00*

U.S. Cl. 52—278 **2 Claims**



A corner assembly including a base corner guide to be secured over an existing structure and having fastener gripping means at the edge thereof for receiving a tandem head fastener and a corner cap which is secured by said tandem head fastener to said guide and which has a locking means for gripping the second of said tandem heads.

3,828,500

REINFORCED CONCRETE CONSTRUCTION

James C. Chancey, 908 W. Ladies Mile Rd., and Leonard C. Ellis, Jr., 2305 Lacross St., both of Richmond, Va. 23223

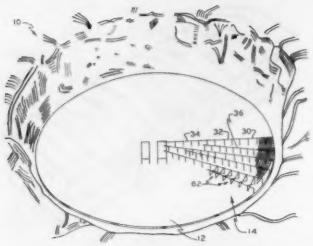
Filed July 30, 1971, Ser. No. 167,623

Int. Cl. E02d *27/08, 27/32*

U.S. Cl. 52—292 **7 Claims**

An improved reinforced concrete construction is provided. The invention is concerned primarily with large, thick reinforced concrete structures of the type used for base slabs for reactors of nuclear power plants, which slabs may be in the order of six to fourteen feet in thickness and measure from one hundred to two hundred feet across. Such structures include mats of reinforcing bars extending thereacross with generally mutually perpendicular junctures, at both lower and upper portions thereof. The upper mat of reinforcing bars is carried on special supporting frames, including uprights and cross bars, which are used to support I-beam stringers on which the upper reinforcing bars rest. The supporting frames

are prefabricated and can be set up rapidly, thereby reducing construction time along with associated labor and other costs.



The frames are also specially braced to enable them to be positioned in vertical planes through which the stringers extend.

3,828,501

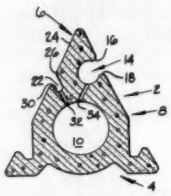
APPARATUS COMPRISING A HOLD-DOWN DEVICE

Lewis B. Haskins, Littleton, Colo., assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Sept. 10, 1973, Ser. No. 395,476

Int. Cl. E04b *1/345*

U.S. Cl. 52—303 **12 Claims**



Apparatus is disclosed comprising a holddown device for anchoring an inflatable thin wall structure which encloses a high humidity environment and simultaneously collecting the condensate formed on the inside of the wall of the structure. The device is elongate and contains means for attachment of the structure canopy and a longitudinal groove for collection of the condensate. Openings are provided for removal of the condensate from the collection groove. Anchoring means to attach the device to underlying earth or other support structure is also disclosed. The crosssectional shape is preferably generally triangular.

3,828,502

MODULAR WALL SECTION FOR BUILDINGS

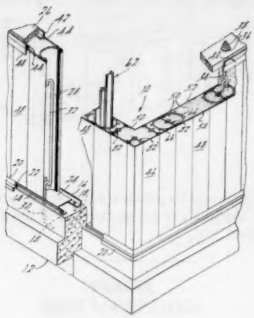
Sven A. Carlsson, Yonkers, N.Y., assignor to Phelps Dodge Industries, Inc., New York, N.Y.

Filed Sept. 8, 1972, Ser. No. 287,283

Int. Cl. E04b *1/62*; **E04c** *1/40, 2/22*

U.S. Cl. 52—309 **13 Claims**

A modular building system including a plurality of upright panels arranged in edge butting relationship with adjacently oriented panels being connected via an interlocking fastener. Each of the individual panels are prefabricated and comprised of first and second spaced, outer skin members having at least one upright rolled over edge for cooperatively receiving the fastener and for engagingly supporting an end partition, the latter having a generally arcuately shaped cross section which defines an upright, concavely extending recess along the transverse side edge of the panel. An insulating core is disposed interiorly of the outer skin and bondingly secures the inner surface of the partition and the outer skin members. After assembly of the prefabricated panels, the recess formed between



adjacent panels is also filled with an insulating core material providing a finished wall of substantially monolithic construction.

3,828,503

RESILIENT FLOOR, ESPECIALLY FOR GYMNASIUMS

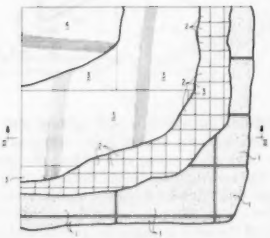
Alwin Hofmann, Hildrizhausan, Germany, assignor to Mero-Werke KG, Wurzburg, Germany

Filed May 4, 1973, Ser. No. 357,270

Claims priority, application Germany, May 4, 1972, 2221761

Int. Cl. E04f *15/04, 15/16*

U.S. Cl. 52—393 **9 Claims**



A final top floor covering is laid on top of a top floor portion formed of fiberboard panels which in turn are disposed on top of smaller square fiberboard elements forming a bottom floor portion. The square fiberboard elements in turn are laid on top of resiliently elastic panels which form a supporting floor. The edge length of the fiberboard panels is an integral multiple of the edge length of the individual square fiberboard elements, which latter is preferably smaller than the edge length of the elastic panels of the supporting floor, wherein the joints between the various panels and elements forming the supporting floor, bottom floor portion, and top floor portion are not in mutual alignment. In a modified form the top floor portion, bottom floor portion and supporting floor are constructed in prefabricated floor elements with overlapping marginal zones whereby adjacent prefabricated floor elements are connected together by screws or the like.

3,828,504
CONCRETE STRUCTURAL MEMBER WITH HIGH INTERNAL DAMPING

Bo Malte Staffan Egerborg, 22, Lundhagsvagen, Ekero; Goran Robert Gadefelt, 30A, Rorstrandsgatan; Gunnar Ingemar Hagbjer, 29, Roslagsgatan, both of Stockholm, and Kjell Spang, 52, Neptunistigen, Vallingby, all of Sweden

Continuation-in-part of Ser. No. 146,776, May 25, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,589

Int. Cl. E04c *3/34*

U.S. Cl. 52—396 **10 Claims**

A concrete structural member comprises at least two elongated concrete elements completely spaced from one another by a continuous intervening layer of viscoelastic material in full surface engagement with each element. The viscoelastic material has a thickness which is a small fraction of the thickness of each element, a modulus of elasticity of 10^6–10^8 N/m², and a loss factor exceeding 0.5.

3,828,505
METAL TRESTLE FOR MANUFACTURING REINFORCED-CONCRETE BEAMS FOR FLOORS

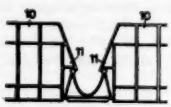
Salvatore Leone, Via Donati, 14 Milan, Italy

Filed Oct. 19, 1971, Ser. No. 190,566

Claims priority, application Italy, Oct. 22, 1970, 83683/70; Oct. 1, 1971, 29365/71

Int. Cl. EO4c *5/00;* **EO4b** *1/14*

U.S. Cl. 52—414 **3 Claims**



A preformed metal trestle comprises two pairs of elongated parallel supporting elements, such as metal rods, two junction members such as iron bars bent in a substantially sinusoidal shape, for connecting respectively each supporting element of the first pair with each supporting element of the second pair, and a third junction member for connecting the two supporting elements of one of said pairs. The supporting elements and the junction members are mutually connected in such a way to form a prism-shape trestle. Reinforcing elements are also provided, such as arcuated elements fixed at the ends to the pair of supporting elements which are not connected by junction members, and at the centrally bent portion to the junction member connecting the other pair of supporting elements. Another embodiment of said reinforcing elements comprise two additional supporting elements respectively fixed to the pair of supporting elements which are not connected by junction members.

3,828,506
CEILING PANEL INSERT

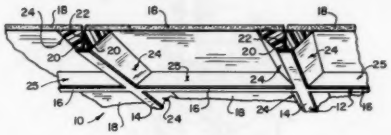
Richard C. Phillips, Arvada, Colo., assignor to Insulation Ceiling & Supply, Denver, Colo.

Filed Sept. 15, 1972, Ser. No. 289,244

Int. Cl. E04b *5/52*

U.S. Cl. 52—475 **13 Claims**

A suspended ceiling panel system includes elongated insert members adapted to rest upon a frame gridwork conventionally used to support acoustical ceiling panels so as to support the panels in a elevated position. At least one insert member at each joint between adjacent insert members has a bevelled end so that adjacent insert members surrounding a common opening in the gridwork will brace each other whereby insert members around each opening are self-supporting and positively retained on the gridwork. Each insert



member has an upper support surface upon which an acoustical panel is adapted to rest and a lower seating surface adapted to rest upon the frame gridwork whereby in the completed ceiling system, each acoustical panel is elevated relative to the gridwork defining recessed zones in the ceiling. The insert members may take various cross-sectional configurations to provide desired versatility in both acoustics and appearance.

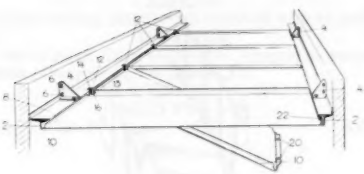
3,828,507
FALSE CEILING SYSTEMS

Barrie William Storer, Hinckley, England, assignor to Burgess Products Company Limited, Hinckley, Leicestershire, England

Filed May 7, 1973, Ser. No. 357,529

Int. Cl. E04b *5/52*

U.S. Cl. 52—484 **20 Claims**



False ceiling system has panels which are pivotably supported on one end and releasably supported at the other end. The ends of the panels are supported on longitudinal members which are mounted to the walls of the building with brackets. The false ceiling system may be positioned in corridors of varying width and provides a convenient access to service ducts during construction and maintenance.

3,828,508
TILE DEVICE FOR JOINING PERMANENT CEILING TILE TO REMOVABLE CEILING TILE

Wolfgang Moeller, 4 Glen Cove Dr., Glen Head, N.Y. 11545

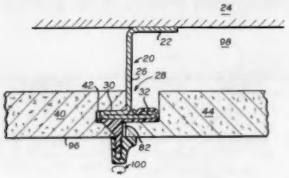
Filed July 31, 1972, Ser. No. 276,871

Int. Cl. E04b *5/52*

U.S. Cl. 52—489 **5 Claims**

An improvement in a suspended ceiling tile construction wherein a permanent ceiling tile is affixed to a suspended bracket, which bracket extends toward an adjacent removable ceiling tile which improvement comprises a supporting member to join said removable tile to said bracket, a generally vertical member descending from said supporting member away from the verticle edge of said removable ceiling tile adjacent said permanent ceiling tile and rotatable means in the form of an eccentric button at the lower end thereof rotatable

to dispose an eccentric portion of said button beneath said removable tile to support the same rotatable to remove said eccentric portion from beneath said ceiling tile so that the same is unsupported, the non-eccentric portion thereof disposed beneath said permanent tile; a button for securing a



removable tile to a permanent ceiling tile which comprises a clip adapted to engage a structural member, a generally vertical member disposed beneath said clip remote from the exterior edge portion of said clip which engages said structural member and eccentric rotatably mounted to said vertical member.

3,828,509

REFRACTORY BLOCK FOR LINING FIRING AND MELTING CHAMBERS

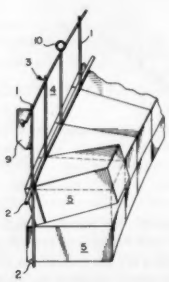
Paul Ottmar, Wiesbaden-Erbenheim, and Hermann Stein, Bad Durkheim, both of Germany, assignors to Didier-Werke A.G., Wiesbaden, Germany

Filed Dec. 29, 1972, Ser. No. 319,703

Claims priority, application Germany, Jan. 3, 1972, 2200081

Int. Cl. F27d *1/04*

U.S. Cl. 52—497 **5 Claims**



A refractory block for lining the firing and melting chambers of metallurgical furnaces or melting equipment includes a metal support in the form of a lattice consisting of longitudinal and transverse bars forming openings. In each opening is positioned at least one brick. Each brick is provided adjacent one end thereof on one longitudinal side thereof with a groove for the reception of the bars extending in one direction of the lattice, and on adjoining longitudinal sides with recessed portions for the reception of the bars extending in the other direction.

3,828,510

SIDING ASSEMBLY STRUCTURE

Phillip Stephen Bettoli, Martinsville, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 334,136

Int. Cl. E04d *3/362*

U.S. Cl. 52—548 **7 Claims**

A siding material suitable for affixing to a substrate or sheeting wherein such siding material consists of two principal portions. An underlay and overlay portion are each respectively joined to one another by means of a suitable fastener, such as a rivet. The rivet is attached through mating holes on the respective portions, where such holes are provided with sufficient clearance with respect to the rivet, so as to enable vertical and horizontal adjustment of the overlay with respect to the underlay once the entire unit has been affixed to the substrate. The advantage of such adjustment derives results from an ability of the installed siding to exhibit a flat face contour rather than a concave or "oil canned" configuration which is unpleasing to the eye.

3,828,511

PROCESS AND DEVICE FOR ANCHORING A BAND USED TO MOUNT VENTILATION DUCTS ETC. IN A CONSTRUCTION

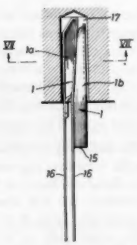
Georg Broberg, Solna, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Feb. 23, 1973, Ser. No. 335,250

Claims priority, application Sweden, Mar. 10, 1972, 3136/72

Int. Cl. E21f *17/02*

U.S. Cl. 52—741 **9 Claims**



A method and a device for anchoring a suspension band in a structural element, such as a ceiling, having a bore. The method consists of forming a loop or bight in the band and driving it into the bore by means of the wedge device which is engaged in the bight with the enlarged forward end of the wedge device innermost in the bore. The device consists of two wedge members which are connected in longitudinal alignment which may be separated by a fracturable impression therebetween. When the upper wedge member is fully engaged in the bore, the lower member is separated from it and is inserted into the bore alongside the first member but on the opposite side of the one leg of the band and is driven home to clamp that leg of the band between the two wedge members

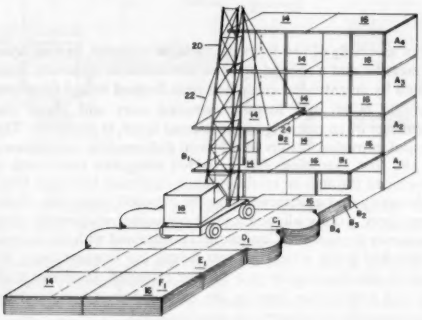
and also to clamp the other leg of the band between the side of the bore and the other wedge member. The first wedge member is provided with stop ears to position it in the bore so that its leading end does not engage the bottom of the bore. Preferably the two wedge members are stamped out of a common sheet of metal material.

3,828,512

METHOD OF FORMING A MULTI-UNIT FOLDING SLAB CONSTRUCTION FOR USE ON RESTRICTED BUILDING SITE

Delp W. Johnson, 240 Oakview Dr., San Carlos, Calif. 94070

Filed Jan. 20, 1972, Ser. No. 219,283
Int. Cl. E04b *1/04, 1/35, 1/344*
U.S. Cl. 52—745 **4 Claims**



A folding slab building is disclosed wherein walls and floors are formed with their edges juxtaposed in the same relation as the walls and floors are juxtaposed when the building is erected. The floor slabs have the wall slabs cast in underlying relation. The slabs as formed on the site before they are erected occupy substantially the same area of the finished building on the site after it is erected. The floor and wall slabs, all formed horizontally, define a roadway for the crane or lifting apparatus which erects the folding slabs. The slabs when moved from their horizontal position to their erected and juxtaposed position, provide an edge-to-edge keying relation. This keying relation provides for support of two ceiling slabs on a common wall slab, permits columnar continuity between overlying and underlying walls the foundation to roof distance of a multistory building; and provides a key between adjoining slabs to counteract shear stresses incurred during dynamic loading of the building.

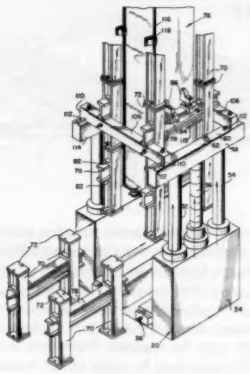
3,828,513

METHOD OF ERECTING A MULTI-STORY BUILDING AND APPARATUS THEREFOR

Peter M. Vanderklaauw, Miami, Fla., assignor to Research Corporation, New York, N.Y.

Division of Ser. No. 114,455, Feb. 11, 1971, Pat. No. 3,692,446. This application June 12, 1972, Ser. No. 261,685
Int. Cl. E04g *13/02*
U.S. Cl. 52—745 **7 Claims**

The basic supporting framework of reinforced concrete slabs and columns for a multi-story building is formed in a roof down fashion and erected in a continuous lifting process from the foundation level. Auxiliary column sections, which retain molding formworks for the columns and are supportingly tied to the formed concrete columns, support the load of the building, until the concrete at the bottom hardens, by bearing on adjustable bearing platforms at the foundation. Lifting devices at the foundation cooperate with the supporting auxiliary column sections to push the building up after each floor is built. The lifting devices raise the auxiliary columns off the cooperating adjustable bearing platforms to permit the insertion under and attachment to the auxiliary column assemblies of a further auxiliary column section with the lifting devices operating in step-by-step alternation with support of the auxiliary column assembly on the bearing platforms until the



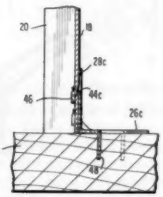
building is raised to the desired height for a new floor at which time a reinforcement cage for a new permanent concrete column to be poured is fixedly inserted in the newly created space within the auxiliary column and attached to the preceding column.

3,828,514

STRUCTURAL JOINT AND CONNECTOR PLATE THEREFOR

John Calvin Jureit, Coral Gables, Fla., assignor to Automated Building Components, Inc., Miami, Fla.

Filed Oct. 8, 1971, Scr. No. 187,744
Int. Cl. F16b *7/00*
U.S. Cl. 52—753 D **6 Claims**



The connector plate comprises a right angle bracket having in one flange a plurality of teeth struck to provide angularly related shank and end portions. The shank portions project in a direction away from the struck flange. The tip portions project toward the struck flange for insertion through the corresponding slot into a wooden member. The other flange is connected to a metal member, for example, by a weld or rivet. In a third form, a plurality of teeth are struck to project from the other flange in a direction away from the first flange for insertion in openings formed in the metal member. The tips of the teeth remote from the bracket are deformed to effect connection between the bracket and metal member.

3,828,515

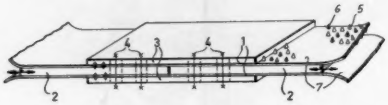
NON-SLIP, HIGH STRENGTH BOLTED JOINTS

Gabor Galgoczy, Benczur u. 3; Zoltan Gyulai, Tapolcsanyi u. 8; Tivadar Palagyi, Gyori u. 14, all of Budapest, and Jozsef Wagensommer, Petofi u. 19, Biatorbagy, all of Hungary

Continuation-in-part of Ser. No. 885,425, Dec. 16, 1969, abandoned. This application May 21, 1971, Ser. No. 146,450

Int. Cl. F16b 5/02

U.S. Cl. 52—758 F 8 Claims



Improved non-slip structural joints between metal members held together by high strength bolts means which hold them in forcible face-to-face engagement, and method of forming such joints. In accordance with the invention strong shearing elements are partially embedded in at least one of the metal members and extend across the interface therebetween. The shearing elements may be separate from and embedded in both metal members, or may be parts of the metal members and embedded in the other of the metal members.

3,828,516

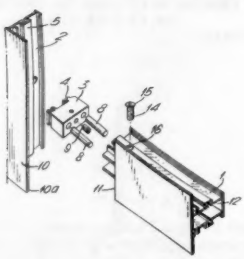
PRESS-FITTED JOINT BETWEEN A TRANSOM BAR AND A FRAME OR SASH BAR FOR USE ON WINDOWS, DOORS OR THE LIKE

Horstmar Kern, Ulm, Germany, assignor to Wieland-Werke A.G., Donau, Germany

Division of Ser. No. 201,707, Nov. 24, 1971, abandoned. This application Aug. 11, 1972, Ser. No. 280,012

Int. Cl. F16b 7/00

U.S. Cl. 52—758 H 4 Claims



A press-fitted joint between a transom bar and the frame or sash bar of a window, door or the like is provided having a connecting piece with parallel hooked ribs which enter the transom bar, such hooked ribs being in engagement with facing hooked ribs on the frame or sash bar wherein the engagement is effected solely with hooks of the connecting piece open in the same direction and hooks of the frame or sash bar open in the other direction and the inter-engaging hooked ribs permit of displacement of the connecting piece in relation to the opening of its hooks at least to the extent of the depth of the hooks relative to the frame or sash bar and that for securing the connecting piece in its frame or sash bar engaging position, one or more fixing pins are provided which are forced into registering holes of the connecting piece and the sash bar.

3,828,517

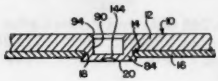
METAL LAYER RIVETFORM AND TWO LAYER ASSEMBLY

Verner A. Johnson, 31460 Myrna St., Livonia, Mich. 48154

Continuation-in-part of Ser. No. 193,076, Oct. 27, 1971, Pat. No. 3,731,369. This application May 7, 1973, Ser. No. 357,783

Int. Cl. F16b 1/00, 3/00

U.S. Cl. 52—758 D 7 Claims



An assembly of two layers of metallic material, or one layer of metallic and a second layer of non-metallic materials, conjoined by an extruded elongated rivet formed in and from one metallic layer, and further extruded over and about the perimeter of an opening in the second layer, is disclosed. The second extrusion results in a lateral deformation conditioned by the first extrusion. The extruded elongated rivet form is developed through an extrude punch operation leaving a blind hole cavity and a depression on the exposed outer side of the rivet form, axially aligned and in opposing relationship with the cavity depression. Conjunction is obtained with the second perforated layer when the two layers are conjunctively arranged and the rivet form is further extruded. Inventive tooling and process for forming the extruded rivet form and for conjoining the two layers are also disclosed.

3,828,518

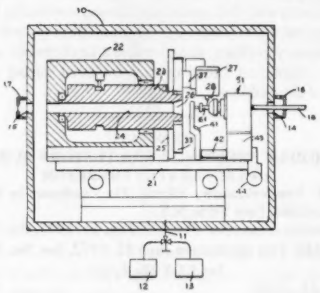
FUEL ROD FABRICATION

Edmond J. Silk, Lynchburg, and Claude A. Moore, Appomattox, both of Va., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Jan. 12, 1971, Ser. No. 105,890

Int. Cl. B65b 31/02, 31/04

U.S. Cl. 53—12 2 Claims



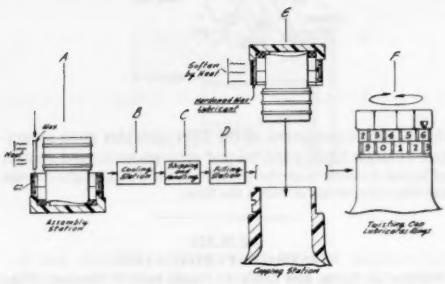
A process of sealing the external junction between an endclosure and a long fuel rod of a slender nature in a controlled gaseous environment by a rotating electrode passing through a predetermined path around the periphery of the junction.

A device for accomplishing the aforesaid process wherein the fuel rod is held in a horizontal attitude at a predetermined position while a rotating electrode operatively fuses the endclosure to such fuel rod.

3,828,519
MEANS FOR TEMPORARILY PRESETTING INTERLOCKING ELEMENTS OF COMBINATION LOCK-TYPE CONTAINER FINISH CLOSURE AND METHOD FOR ASSEMBLING SAME

John Levey, 4059 Mariners Cir., Westlake Village, Calif. 91361

Filed Mar. 29, 1972, Ser. No. 239,287
Int. Cl. B65b 7/28; B65d 55/00
U.S. Cl. 53—15 5 Claims



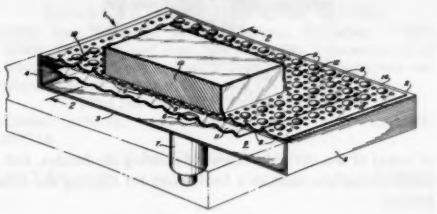
In combination with a cylindrical container "finish" or spout and closure therefor, wherein the latter is securable against removal from the "finish" or spout by a plurality of interlocking projections and recesses, at least some of which are movable circularly relative to the axis of the "finish" cylinder and to the others of said projections and recesses by means of annular elements associated therewith, and also rotatable relative to the cylinder axis, where the closure may be placed on the container "finish" or spout, or removed therefrom only when the annular elements are disposed in certain predetermined positions in which the projections and recesses fall in register; a yieldable composition applied to the projections or recesses prior to the closure being placed upon the "finish" or spout and with the projections and recesses being so in register. This composition, an exemplar of which may be paraffin, should have sufficient rigidity to retain the projections or recesses so in register against inadvertent movement of of register through mishandling, shaking or jarring during shipment or handling, but must, nevertheless be rupturable upon the rotation of such annular elements by the application of modest force thereto, such as manually, to effect rotation thereof; whereupon such composition, upon thereby being ruptured, thereafter serves as a lubricant to facilitate rotation of the annular elements and movement of the projections and recesses relative to each other. The invention also includes a method for using such a composition in assembly operations.

3,828,520
VACUUM PACKAGING METHOD AND PLATEN THEREFOR

Charles Merritt, Corpus Christi, Tex., assignor to Substrate Inc., Corpus Christi, Tex.

Filed Apr. 4, 1973, Ser. No. 347,637
Int. Cl. B65b 31/00
U.S. Cl. 53—22 A 5 Claims

The top surface of a platen is provided with a plurality of apertures, leading to a vacuum chamber therein, and a plurality of protuberances extending upwardly therefrom, the apertures and protuberances being arranged as grids extending over the top of the platen. A first plastic film is placed on the platen top, leaving apertures and protuberances beyond the periphery of the first plastic film uncovered, the said film draping around those protuberances covered thereby, and being dimpled upwardly thereby. The article to be packaged is placed on the first film and a second plastic film is placed over the article and over the first film, covering the entire platen top, draping around those protuberances not covered by the first film so that the underside of the second film lies directly over those apertures not covered by the first film. The second film lies substantially flat across the tops of the dimples in the first film because of atmospheric air therebetween. Vacuum is applied to the platen, and air around article and between films

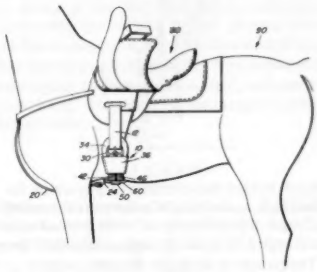


is withdrawn through the channels defined by the dimples and thence through the apertures covered by the second film, whereupon atmospheric pressure acting on the top of the second film forces the second film into full contact with the first film around the article to make a completely sealed air tight package for the said article.

3,828,521
HUMANE ELASTIC CINCH

George W. Dulaney, Rt. No. 2, Hampstead, Md. 21074

Filed Nov. 11, 1971, Ser. No. 197,696
Int. Cl. B68c 1/14
U.S. Cl. 54—23 6 Claims



An improved elastic cinch for securing a riding saddle to a horse. This elastic cinch is made of folded, soft leather, with foam rubber padding. There are two elastic strip sections as a part of this cinch assembly, which gives it approximately 4 inches of stretch. On each end of the cinch there are two metal attaching buckles, which have soft leather protective covers. This cinch is designed to give added comfort and to assure greater safety to both the rider and the horse.

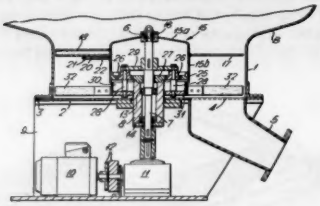
3,828,522
BOTTLING SYSTEM

Kazuo Ueda, Tokyo, Japan, assignor to Shikoku Kakooki Co., Ltd., Tokushima, Japan

Division of Ser. No. 231,286, March 2, 1972, Pat. No. 3,792,949. This application Mar. 19, 1973, Ser. No. 342,380
Int. Cl. B65b 3/02
U.S. Cl. 53—167 6 Claims

A bottling system comprising a molding machine for producing synthetic resin bottles, a bottle aligning machine for continuously receiving the bottles and sending them successively out in a row in an upright position, a bottling machine to

be supplied with the bottles from the bottle aligning machine for filling the bottles, a printing machine disposed in the path



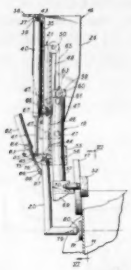
of travel of the upright bottles for printing the bottles, and a capping machine such as a heat sealer for capping the filled bottles.

3,828,523

AUTOMATIC INSIDE HEAD HOLDER STRUCTURE

Lawrence A. Brenner, West Chester, and Charles H. Scholl, Adamstown, both of Pa., assignors to Beloit Corporation, Beloit, Wis.

Filed Nov. 20, 1972, Ser. No. 308,113
Int. Cl. B65b *7/04, 11/04*
U.S. Cl. 53—380 **12 Claims**



Inside head holder for a crimping apparatus for folding down and tucking in the ends of a wrapper extending beyond the ends of a roll of paper along an inside protective head. The wrapper is crimped by a paddle supported above the roll on a carriage. The paddle is vertically movable relative to the carriage and moves downwardly into engagement with the wrapper extending beyond the roll to crimp the projecting end of the wrapper about an inside protective head for the end of the roll. The head holder is mounted on the carriage and moves upwardly and downwardly with the crimper paddle half the distance of travel of the crimper paddle to thereby divide the diameter of the roll in half as the crimper senses the diameter of the roll. The head holder, therefore, automatically senses the center of the roll and holds a protective head in centered relation with respect thereto during the crimping operation.

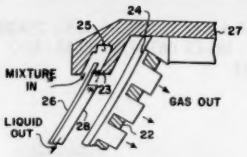
3,828,524

CENTRIFUGAL LYOPHOBIC SEPARATOR

Franklin W. Booth, Hampton, and Robert A. Bruce, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 9, 1971, Ser. No. 169,962
Int. Cl. B01d *19/00*
U.S. Cl. 55—43 **33 Claims**

A centrifugal separator using a lyophobic filter for removing liquid particles from a mixed stream of gas and liquid under various negative or positive external acceleration conditions as well as zero *g* or weightless conditions. Rotating the lyophobic filter and inclining the filter to the entering flow improves



the lyophobic properties of the filter, provides gross separation of larger liquid particles and prevents prolonged contact of liquid droplets with the spinning filter which might change the filter properties or block the filter.

3,828,525

WASTE GAS PURIFICATION

William M. Copa, and Louis A. Pradt, both of Wausau, Wis., assignors to Sterling Drug Inc., New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,233
Int. Cl. B01d *53/14*
U.S. Cl. 55—68 **3 Claims**

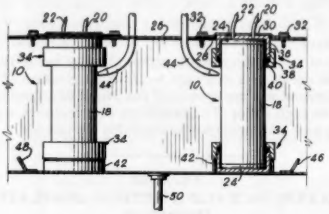
Contaminants and odors are removed from the waste gases emanating from wet air oxidation reactors by passing the gases through an aqueous suspension of activated sewage sludge or the mixed liquor obtained by suspending activated sewage sludge in fresh sewage.

3,828,526

PARTICLE COLLECTOR

Arthur S. King, 9013 W. 51st Ter., Merriam, Kans. 66203

Filed Oct. 17, 1972, Ser. No. 298,310
Int. Cl. B03c *3/06, 3/78*
U.S. Cl. 55—118 **4 Claims**

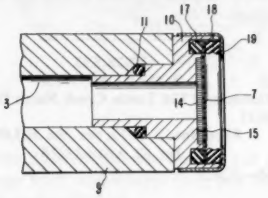


A particle collector, such as for installation within a heating duct for removing dust from the air flowing therethrough, is capable of corona-free operation to preclude the generation of ozone within the heating duct. The composite collector has inner and outer tubular electrodes separated by a dielectric casing with a dielectric sheathing around the outer electrode so that a charge is imparted to the sheathing for retention thereby to attract charged particulate matter. A series of the composite collectors charged alternately positive and negative may be utilized to remove both negatively and positively charged particulate matter from a fluid stream, and a spray wash system may be employed to periodically remove collected matter from the units.

3,828,527
LEAK DETECTION APPARATUS AND INLET INTERFACE

Walton E. Briggs, Lynnfield, and Joseph C. Maliakal, Millis, both of Mass., assignors to Varian Associates, Palo Alto, Calif.

Filed Sept. 28, 1972, Ser. No. 293,206
Int. Cl. B01d *31/00*
U.S. Cl. 55—158 **4 Claims**

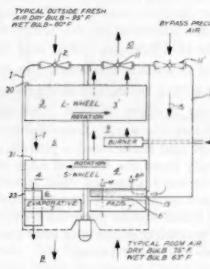


A leak detection apparatus having a mass spectrometer tuned to detect helium has an interface with atmosphere in the form of a portable probe containing a gas inlet membrane which is operable without a heater to permit the passage of helium in sufficient quantity for sensitive detection of leaks.

3,828,528
ADIABATIC SATURATION COOLING MACHINE

Sanford A. Weil, Chicago, Ill., assignor to Gas Development Corporation, Chicago, Ill.

Division of Ser. No. 118,196, Feb. 23, 1971, which is a continuation of Ser. No. 791,000, Jan. 14, 1969, abandoned. This application May 18, 1972, Ser. No. 254,807
Int. Cl. B01d *53/06*
U.S. Cl. 55—388 **7 Claims**

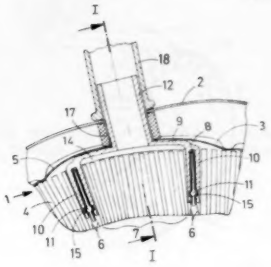


An improved adiabatic saturation cooling machine of the open-cycle type and method of operation in which the capacity of the machine is increased by routing by-pass streams of air through either the S-wheel or the L-wheel. The amount of these by-pass streams are from 0 to 100 percent that of the main exhaust stream of air passing from the room through the S-wheel. In the first embodiment the by-pass air is outside air and is directed to the regenerative "side" of the S-wheel. Such a by-pass stream ranging from 95° to 80° F will cool the air from the S-wheel an additional 2.6 to 5.9°F below that capable by the room air exhaust stream alone. The outside air by-pass stream may be passed directly through the S-wheel or pretreated by passing through an E-pad. In the second embodiment, where there is sufficient air supplied to the burner section to regenerate the L-wheel, a portion of the primary room exhaust air stream is recirculated as a by-pass stream to the input face of the L-wheel. A third embodiment is directed to incoming air bypassing the E-pads from the cooling side of the S-wheel. A fourth embodiment is directed to a return by-pass for directing the first stream of incoming L-wheel air back out the regenerative "side" of the L-wheel.

3,828,529
APPARATUS FOR FILTERING OIL VAPORS

Gunter Frey, Fellbach; Arthur Nikolaus, Hoflacher; Walter Ebing, Stuttgart, and Hans Rolf Kalberer, Winnenden, all of Germany, assignors to Knecht Felterwerke Gesellschaft mit beschraenkter, Haftung, Germany

Filed Feb. 20, 1973, Ser. No. 333,795
Claims priority, application Germany, Mar. 1, 1972, 2209718
Int. Cl. B01d *46/52*
U.S. Cl. 55—419 **8 Claims**

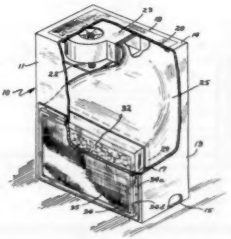


Apparatus for filtering oil vapors exhausted from the crank case of a motor or the like, comprising a housing having a frontal cover disk and a star shaped pleated filter element located in the housing. An inlet member comprises a tubular connection having a pair of clamping means spaced from each other and adapted to clamp over a pleat, is formed integrally with the cover disk. The clamping means span a defined sector of the filter element.

3,828,530
FILTER SYSTEM

Max D. Peters, 633 Turnpike Rd., Minneapolis, Minn. 55416

Continuation-in-part of Ser. No. 176,988, Sept. 1, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 355,079
Int. Cl. B01d *31/00*
U.S. Cl. 55—473 **14 Claims**



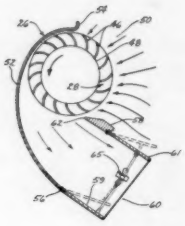
A filter system suitable for clean benches, or clean rooms, or wall modules that includes a housing that is closed other than for an air intake opening and an air discharge opening, a prefilter mounted in the air intake opening, a high efficiency filter mounted in the discharge opening, a blower mounted in the housing, a plastic duct having one end sealed to the blower

outlet and an opposite end sealed to the high efficiency filter for conducting air under pressure from the duct to the high efficiency filter, the duct other than at the discharge opening being spaced from the walls of the housing whereby any air drawn into the housing, and leakage air between the housing interior and the ambient atmosphere, including adjacent the high efficiency filter, is drawn into the blower to be conducted through the high efficiency filter prior to discharge from the housing.

3,828,531
VORTEX FAN MEANS FOR A CROP GATHERING APPARATUS

Graeme R. Quick, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa

Filed Mar. 14, 1969, Ser. No. 807,341
Int. Cl. A01d *45/20*
U.S. Cl. 56—12.9 **1 Claim**

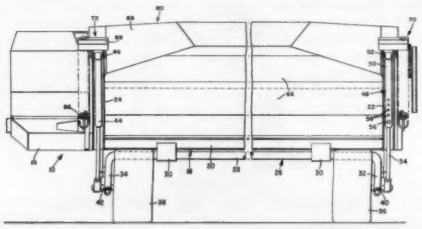


A vortex fan means for a crop gathering apparatus such as a combine or the like. The fan means extends across the forward end of the combine at a position forwardly and above the combine header assembly. The fan means includes a housing partially extending around the fan rotor assembly and has a discharge opening formed in its lower rearward end. The fan means directs air downwardly and rearwardly towards the sickle bar of the header assembly to cause the standing crop to be bent over the sickle bar to improve the cutting action thereof and to aid in the feeding action on the platform.

3,828,532
HARVESTING MACHINE SUSPENSION SYSTEM

J. Clark Fickle, and Ralph August Gerhardt, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 15, 1973, Ser. No. 416,107
Int. Cl. A01d *43/00*
U.S. Cl. 56—14.4 **8 Claims**

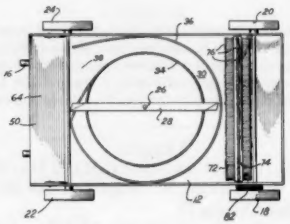


A pull-type mower-conditioner has an L-shaped frame including a transverse beam and a pair of transversely spaced frame members extending upwardly and rearwardly from the beam adjacent the opposite ends of the beam. A harvesting header is disposed generally above and forwardly of the beam and is mounted on the main frame for vertical adjustment by means of a parallel link-type suspension system. A U-shaped support member has its central portion rotatably supported on the beam and a pair of rearwardly extending arms respectively journaling ground-engaging wheels adjacent the opposite ends of the beam. A remotely actuated hydraulic cylinder extends between a wheel arm and the top of the upright frame member at the left side of the machine and is actuatable to swing the support member and thereby raise and lower the main frame. A pair of telescoping members extend between the other wheel arm and the top of the other upright frame member and are selectively lockable together to lock the main frame in a raised position.

3,828,533
ROTARY MOWER

John L. Finneran, 1724 Turtle Creek North Dr., South Bend, Ind. 46637

Filed Nov. 2, 1972, Ser. No. 303,095
Int. Cl. A01d *35/26*
U.S. Cl. 56—320.2 **4 Claims**



A rotary mower having a handle, a housing mounted on wheels, an engine mounted in a depression in the top of said housing, a shaft extending vertically from said engine into said housing, a circular chamber inside said housing, and a blade or other cutting means mounted on the lower end of said shaft for rotation inside said housing below said depression and a major part of said chamber. Enclosing the underside of said housing is a plate with a deflection along its rear edge extending under the rear portion of said housing and forwardly beyond said shaft but rearwardly from the forward end of the path of rotation of said blade, and a plurality of spaced rods extending forwardly from the forward edge of said plate to a point near the forward edge of said housing. A crossbar member is provided adjacent the forward ends of said spaced rods and a rotary brush means powered by the rotation of one of said wheels is provided inside and near the forward end of said housing above said spaced rods.

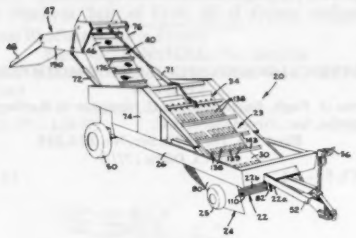
3,828,534
ARTICLE PICKUP MACHINE

Leon R. McRobert, Ocoee, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 27, 1972, Ser. No. 248,146
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 R **22 Claims**

A mobile article pickup machine for picking up rollable articles such as citrus fruit from a surface which varies in contour both longitudinally and laterally of the path of movement of the machine. The machine includes a rigid elevator frame that is connected to the vehicle chassis by a three point pivotal suspension and has its forward end supported for free floating action on the support surface. A steeply inclined bar elevator is supported by the frame for lifting citrus fruit from the ground or supporting surface, and a weighted draper bears against the fruit and causes the fruit to roll and become par-

tially cleaned as it is moved up the elevator. The weights prevent movement of the fruit down the elevator. A trash separator receives the fruit from the elevator and serves to separate the large trash, non-rollable fruit, and fine debris from the rollable marketable fruit.



3,828,535

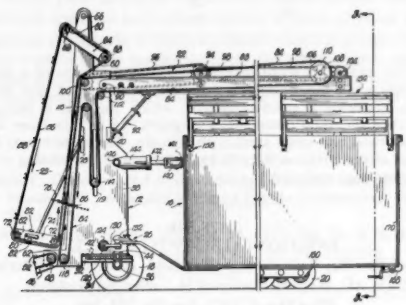
HAY LOADER

Ezra Cordell Lundahl, Providence, Utah, assignor to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 876,944, Nov. 14, 1969, Pat. No. 3,728,849. This application Feb. 7, 1973, Ser. No. 330,248

Int. Cl. A01d *89/00*

U.S. Cl. 56—344 **16 Claims**



A stacking machine for agricultural crops forms a stack in an open top body as the crop is picked up, elevated and conveyed into the body. The hay, fodder or the like is periodically compressed and the stack thereupon unloaded in a manner to maintain its size, shape and compactness.

3,828,536

SUGAR CANE LOADER-CLEANER MACHINE

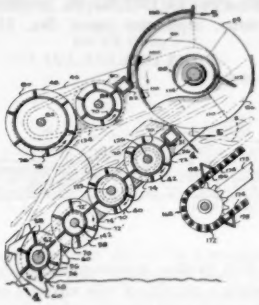
Larry G. Fowler, Belle Glade, Fla., assignor to Sugar Cane Growers Cooperative of Florida, Belle Glade, Fla.

Filed May 1, 1972, Ser. No. 248,970

Int. Cl. A01d *45/10*

U.S. Cl. 56—502 **22 Claims**

A field operated cane loading and cleaning vehicle is provided with a rotary pickup drum adjacent the ground for picking up windrowed cane, a conveyor conveys the can to a continuously rotating segmentizer drum which slices the cane into small segments from which it is conveyed to a kicker drum which hurls the segments into a cleaning chamber where they are subjected to an air blast for separating trash from the cane segments which then fall onto a removal conveyor to be discharged onto a truck or the like; the pickup drum has radially extending fingers which engage and lift the cane from the field and the segmentizer drum employs triangular blades which slice through the can to minimize wastage and cane damage.



3,828,537

PRODUCTION OF TEXTURISED YARN

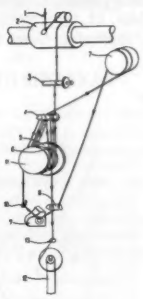
Werner Doschko, NuBloch, Am Leimbach, and Hermann Rinklin, Oestringen, both of Germany, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 6, 1972, Ser. No. 304,033

Claims priority, application Great Britain, Nov. 17, 1971, 53300/71; July 13, 1972, 32813/72

Int. Cl. D02g *1/02*

U.S. Cl. 57—34 HS **15 Claims**



A process for producing bulk is described by sequentially drawing and false twist texturizing a synthetic yarn wherein the yarn is withdrawn from the texturizing zone at a greater speed than it is fed thereto. In a preferred embodiment, the draw roll for the drawing step also serves as the take-off roll for the texturizing zone and is stepped so that the portion used to take off the texturized yarn is of greater diameter than the part used for drawing. A further preference is that the heater in the texturizing zone is a heated pin.

3,828,538

HIGH-SPEED DOUBLE TWIST TWISTING APPARATUS MAINLY ADAPTED TO TWIST STEEL WIRES

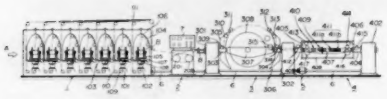
Tokuji Yoshida, and Mitsuzi Amakasu, both of Tokyo, Japan, assignors to Yoshida Engineering Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1972, Ser. No. 314,553

Claims priority, application Japan, Dec. 13, 1971, 46-101296

Int. Cl. D07b *3/08, 3/12*

U.S. Cl. 57—58.54 **4 Claims**



A double twist twisting apparatus adapted to twist steel wires, comprising a plurality of wire suppliers each having a base pedestal, a main shaft rotatable relative to said pedestal, a first flyer fixed to said shaft, a frame mounted on said first flyer, a wire supply source adapted to remain stationary with respect to said pedestal, even while said flyer rotates, and a plurality of guide rollers mounted on said frame, said wire suppliers each imparting two back-twists to a wire delivered from said wire supply source for each rotation of said first flyer; a back tension capstan for imparting back tension to a group of wires delivered from said wire suppliers; an open-shaped twister having a pair of second flyers being C-shaped and diametrically opposed to each other and supporting a take-up motion between said second flyers via a frame, for imparting a first twist to said group of wires; and a third flyer adapted to be rotated in the same direction and at the same speed as said twister, for imparting a second twist to said group of wires; said third flyer having a twist pitch determining capstan, a wire straightener, a coarse winder, and a slip capstan all supported in said flyer via a frame.

3,828,539

OPEN-END TEXTILE SPINNING MACHINES

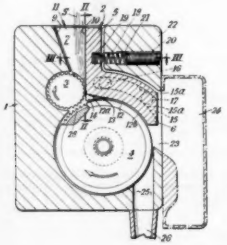
Fred Croasdale, Whalley; James William Barnes Clayton, Arnside, and Keith Norman, Oswaldtwistle, all of England, assignors to Platt International Limited, Oldham, England

Filed Mar. 12, 1973, Ser. No. 340,082

Claims priority, application Great Britain, Mar. 13, 1972, 11526/72

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.91 **20 Claims**



A sliver feeding device for an open-end spinning machine includes a feed roller, an opening roller, and a displaceable feed pedal biased towards the feed roller. A sliver forming nip is formed between a first surface of the feed pedal and the peripheral surface of the feed roller. The feed pedal also has a second surface adjacent the peripheral surface of the opening roller. The device is provided with constraining means associated with the feed pedal to constrain the feed pedal whereby displacement of the feed pedal produces no substantial variation in the minimum clearance between the first surface and the peripheral surface of the open roller.

3,828,540

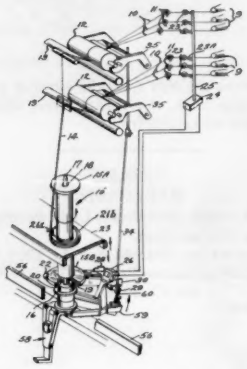
INDIVIDUAL BOBBIN SPINDLE STOP MOTION FOR A TWISTER

Charles D. Pugh, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jan. 16, 1973, Ser. No. 324,215

Int. Cl. D01h *13/16*

U.S. Cl. 57—81 **16 Claims**



The apparatus stops take up and feed functions of a yarn twister while means detects a broken or exhausted yarn feed and activates a control system, which through a linkage mechanism, simultaneously disengages the bobbin from the drive twirl and stops same with a brake. The system may be reset after activation but will again activate if the missing yarn has not been replaced.

3,828,541

FRICTION FALSE-TWIST DEVICE

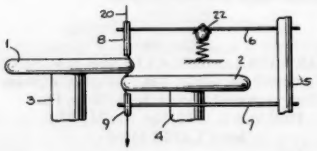
Josef Raschle, Buetschwil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Canton of St. Gallen, Switzerland

Filed May 1, 1973, Ser. No. 356,206

Claims priority, application Switzerland, May 3, 1972, 6588/72

Int. Cl. D01h *13/04*; **D02g** *1/08*

U.S. Cl. 57—106 **13 Claims**

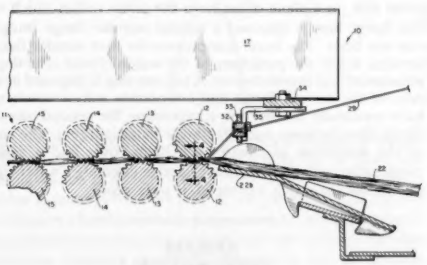


A friction false-twist device has at least one pair of friction discs mounted on parallel shafts for rotation about the axes thereof and a swivel shaft has at least two thread-guide elements thereon arranged so that at least one guide element is above and one guide element is below the discs.

3,828,542
NOVEL EFFECT YARNS AND PROCESS FOR PRODUCING THE SAME
Alexandre Boutonnet, Dommartin; Georges Clavelet, and Gilbert Morieras, both of Lyon, all of France, assignors to Societe Rhodiaceta, Paris, France
Filed Nov. 18, 1971, Ser. No. 200,104
Claims priority, application France, Nov. 18, 1970, 70.41663
Int. Cl. D02g 3/04, 1/02
U.S. Cl. 57—140 BY 13 Claims

Effect yarns having an irregular and twisted surface formed from at least two components having different physical properties, at least one of which is a thermoplastic material which are intermittently bonded to form the effect. These effect yarns are produced by heating the yarns to soften at least one component and twisting and untwisting the softened yarns.

3,828,543
ANTISTATIC YARN
Reid C. Goodbar, and Arther Mitchell Pressley, both of Ware Shoals, S.C., assignors to Riegel Textile Corporation, Ware Shoals, S.C.
Division of Ser. No. 63,755, Aug. 14, 1970, Pat. No. 3,703,073. This application July 31, 1972, Ser. No. 276,890
Int. Cl. D02g 3/12
U.S. Cl. 57—140 BY 9 Claims



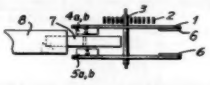
There is disclosed a method and apparatus for producing yarn having discontinuous staple lengths of metal filaments uniformly interspersed therein by preventing slubbing of the metal multifilament tow during drawing thereof.

3,828,544
TWO-COMPONENT YARNS
Heinrich Alker, Solingen, Germany, assignor to Firma Olbo Textilwerke GmbH, Solingen-Ohligs, Germany
Filed Oct. 3, 1972, Ser. No. 294,674
Claims priority, application Germany, Oct. 4, 1971, 2149426
Int. Cl. D02g 3/36
U.S. Cl. 57—152 9 Claims

A two-component yarn, one of the components consisting of an endless yarn core deformable partly elastically and partly plastically, the other component consisting of staple fibres and slippable with respect to the core if the yarn undergoes appreciable expansion or elongation. The staple fibres may surround the endless yarn in the form of a spun covering, or be twisted around the endless yarn in the form of a thread or yarn. The staple fibres consists of cotton, rayon staple or plastics fibres and the endless yarn of unstretched synthetic material such as Nylon, polyester or similar plastics.

The two-component yarn can be used to produce various threads, fabrics, woven materials, plaited materials, non-woven materials of parallel strands or other flat textiles of high strength and great uniformity.

3,828,545
DRIVING CIRCUIT FOR ELECTRONIC TIMEPIECE
Yuki Tsuruishi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Apr. 6, 1972, Ser. No. 241,603
Claims priority, application Japan, Apr. 8, 1971, 46-21369
Int. Cl. G04c 3/04; H02k 33/04; H03b 5/36
U.S. Cl. 58—28 A 6 Claims

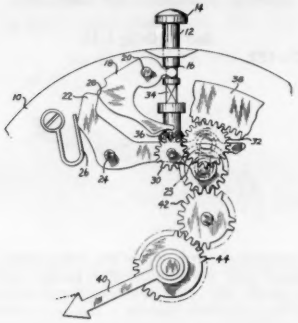


A driving circuit for an electronic timepiece having two pairs of transistors of different conductivity. The driving circuit is coupled to a two-terminal driving coil fixed in the gap between the plates of a balance wheel, said balance wheel being provided with a magnetic circuit formed from two pairs of permanent magnets, one of said pairs being mounted on each of said plates. The pairs of transistors are rendered conductive alternately the moment a relatively large impulse is induced in the coil to apply a driving current to said coil.

3,828,546
SETTING MEANS FOR TIME ZONE WATCH WITH CALENDAR DISPLAY
Toshiaki Saito, Suwa, and Hisashi Kobaysshi, Okaya, both of Japan, assignors to Kabusiki Kaisha Suwa Seikosha, Tokyo, Japan
Division of Ser. No. 222,261, Jan. 31, 1972. This application Mar. 26, 1973, Ser. No. 344,616
Claims priority, application Japan, Feb. 3, 1971, 46-3770
Int. Cl. G04b 19/22, 19/24
U.S. Cl. 58—42.5 3 Claims

A correction device for a watch having a plurality of adjustable time displays utilizes a single control element extend-

ing externally of the watch and adapted to be manually operated to adjust the plurality of time displays. Operating means operatively associates each of the adjustable time displays with the control element whereby the latter is operable

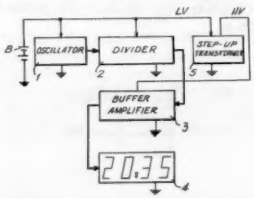


to adjust each of the time displays. By way of example, the control element may be used to adjust a first time display indicating local time and a second time display indicating the hour in a time zone other than that in which the wearer of the watch is located.

3,828,547
QUARTZ CRYSTAL TIMEPIECE

Kinji Fujita, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 4, 1972, Ser. No. 223,666
Claims priority, application Japan, Feb. 18, 1971, 46-7161
Int. Cl. G04b *19/30;* **H05b** *39/00*
U.S. Cl. 58—50 R **4 Claims**



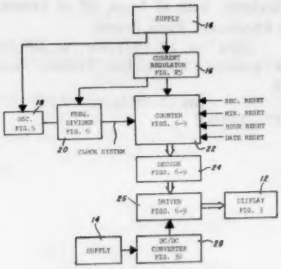
A timepiece having a quartz crystal vibrator serving as a time standard, a liquid crystal display, and divider and driving circuits formed from COS/MOS transistors dividing the high frequency signal from the vibrator into low frequency timing signals for the direct driving of the liquid crystal display. The driving circuit includes a COS/MOS inverter directly coupled at its output to each liquid crystal display segment.

3,828,548
LIQUID CRYSTAL DRIVE CIRCUIT

Robert C. Martin, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 19, 1972, Ser. No. 263,818
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R **3 Claims**

An electronic timekeeping device includes bipolar integrated circuit implemented logic in combination with a liquid crystal display. The bipolar circuitry is configured to effectively implement logic functions with a supply voltage of 1 volt. Drive circuitry is coupled to the liquid crystal display to effectively impress an a.c. voltage across the liquid crystal cell. Logic of the drive circuitry is effective to provide out of phase voltages across the liquid crystal cell when display is required.

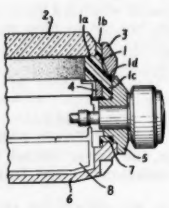


When display is not required the voltages across the liquid crystal display cell are in phase such that effectively no potential difference is generated across the liquid crystal material.

3,828,549
WATERTIGHT WATCHCASE

Hideo Nozawa, Tokyo; Masayoshi Aoki, Funabashi, and Shoji Isono, Tokyo, all of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 14, 1973, Ser. No. 424,890
Claims priority, application Japan, Dec. 18, 1972, 47-145337
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 R **7 Claims**



A waterproof watchcase having a watch crystal sealed with a bezel circumferentially thereof. The seal is effected by a sealing ring, made of an elastic material, without use of adhesives. The sealing ring has a body provided with a first circumferential annular flange on one side of the body and on an opposite side, in a plane offset from the plane within which the first flange lies, is disposed a second annular flange integral with the body. The bezel compresses the first annular flange between it and the periphery of the watch crystal effecting a waterproof seal therebetween. A tension ring is disposed internally of the second flange and cooperates with a watchcase band externally thereof for compressing the second annular flange therebetween and effecting a watertight seal. The back of the watchcase is closed by a back cover and a gasket cooperative with the watchcase band in effecting a water-tight seal so that the watch is completely waterproof.

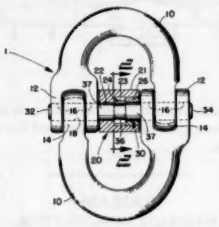
3,828,550
COUPLING LINK

Richard H. Fink, York, Pa., assignor to Campbell Chain Company, York, Pa.

Filed Jan. 12, 1972, Ser. No. 217,134
Int. Cl. F16g *15/02*
U.S. Cl. 59—85 **4 Claims**

A coupler link having two U-shape half links hingedly joined at the interdigited ends thereof by a pin extending

through such ends, the pin being held in place against axial movement by a retaining member interposed between such ends and about the pin. The retaining member includes a body having a bore therethrough with a counterbore at one end thereof and a spring clip positioned and held within the counterbore, such clip being coaxial with the bore and of slightly smaller diameter. The spring clip is adapted slightly to expand upon the insertion of the pin until an annular groove on the pin is in alignment with such spring clip allowing the same to contract embracingly against the pin, thereby to lock the pin in position.



3,828,551
MAIN STREAM LIQUID-FUEL ROCKET ENGINE CONSTRUCTION AND METHOD OF STARTING A LIQUID-FUEL ROCKET ENGINE

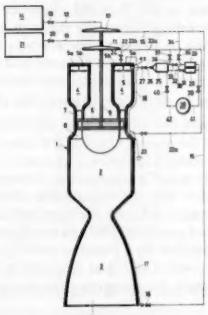
Gunther Schmidt, Unterhaching, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschrankter Haftung, Munchen, Germany

Filed Nov. 1, 1972, Ser. No. 302,772

Claims priority, application Germany, Nov. 10, 1971, 2155786

Int. Cl. F02k *9/02*

U.S. Cl. 60—204 **5 Claims**



A method of starting a liquid-fuel rocket engine of the so-called "main stream" construction which has at least one precombustion chamber, a main combustion chamber and a turbine located in the flow path of the gases between the two combustion chambers which is operated to drive the propellant component pumps and using at least one ignition chamber comprises, directing propellant components into the ignition chamber and igniting them to produce gases, preferably oxygen-rich gases, directing the produced gases to the precombustion chamber for flow therethrough and through the turbine and main combustion chamber to preheat them and to run the turbine to drive the propellant component pumps, and after the pumps come up to an operating speed, discharging the propellant components to said precombustion chamber and said main combustion chamber to produce propellant gases in the preheated main combustion chamber. The apparatus which is employed includes valve controls, such as throttle valves, for regulating the supply of the components to the ignition chamber and for shutting off the ignition chamber from operation. The arrangement is such that the ignition chamber can be operated subsequently for the reignition of the rocket engine if desired.

3,828,552
SYSTEM FOR REDUCING TOXIC COMPOUNDS IN EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

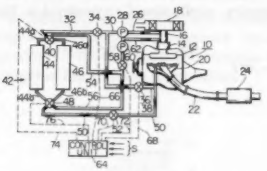
Kouichi Nishiguchi, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Nov. 8, 1972, Ser. No. 304,679

Claims priority, application Japan, Dec. 10, 1971, 46-100557

Int. Cl. F02b *75/10*

U.S. Cl. 60—304 **5 Claims**



A system for reducing toxic compounds in exhaust gases emitted from a gasoline powered internal combustion engine, which system includes an air-denitrogenating unit which is adapted to separate nitrogen molecules from the atmospheric air. The nitrogen molecules separated by the air-denitrogenating unit is introduced into an air induction passage of the engine so as to enrich an air-fuel mixture to be supplied into the engine for thereby reducing the concentration of nitrogen oxides in the engine exhaust gases. The denitrogenated air containing a large proportion of oxygen therein is supplied into an exhaust manifold of the engine as secondary air for effecting oxidizing reactions of unburned hydrocarbons and carbon monoxide in the engine exhaust gases.

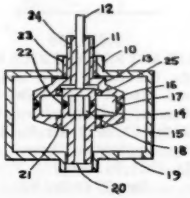
3,828,553
TURBINE HAVING POWERED INNER ROTOR FOR IMPARTING ADDITIONAL VELOCITY TO ENTERING FLUID

Michael Eskeli, 6220 Orchid Ln., Dallas, Tex. 75230

Filed Feb. 8, 1973, Ser. No. 330,666

Int. Cl. F01d *1/18*

U.S. Cl. 60—330 **4 Claims**



A method and apparatus for generating power in response of a fluid flowing from a higher pressure and enthalpy to a lower pressure and enthalpy in a rotating turbine. Turbine has two rotors, with the inner rotor rotated by external power

source and the outet rotor being the power output rotor. Work is produced by said outer rotor by a reaction on rotor nozzles by leaving working fluid. Said working fluid is pressurized within said outer rotor cavity by injecting said working fluid to said cavity by nozzles mounted on said inner rotor, with said fluid entering the said outer rotor cavity in the direction of rotation, with the entering velocity of said working fluid being usually higher than the local velocity of said outer rotor in the area of entry. Thus the working fluid is pressurized within said outer rotor cavity, since said fluid will be forced to follow a curved path within said cavity; with the higher pressure, the velocity of fluid leaving said outer rotor nozzles is increased thus producing more torque and more work.

3,828,554
TORQUE CONVERTER

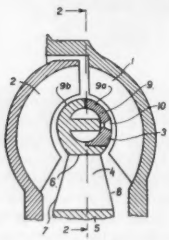
Antonin Hau, Praha, Czechoslovakia, assignor to Ustav pro vyzkum motorvych vozidel, Praha, Czechoslovakia

Filed Feb. 9, 1973, Ser. No. 331,113

Claims priority, application Czechoslovakia, Nov. 26, 1971, 8254-71

Int. Cl. F16h *41/00*

U.S. Cl. 60—361 **2 Claims**



A hydraulic torque converter comprising a pump wheel, a turbine wheel each having radially inward blades of a circular segment shape and a stator conversion unit. The stator unit comprises a plurality of fixed reactor blades uniformly spaced between a pair of coaxial cylindrical rings, each of the blades having its axial leading and trailing edges when viewed in the axial direction offset relative to each other so that they do not overlap. The root of the reactor blades are integrally cast with one cylindrical ring forming a hub and their outer ends are secured to the other ring about which a torroidal riser is secured having an outer surface conforming to the segment shape blades and is located between to the outer surface of the outer ring and extend between the pump and turbine wheels.

3,828,555
POWER PLANT FOR VARIOUS VEHICLES

Pierre Capdevielle, Garches, France, assignor to Jean-Loup Giros, Paris and Marcel Capdevielle, Saint Georges Sur Cher, both of, France, parí interest to each

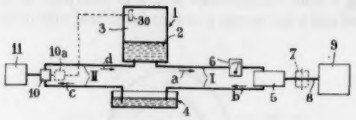
Filed Mar. 23, 1972, Ser. No. 237,395

Claims priority, application France, Mar. 24, 1971, 71.10346; Dec. 21, 1971, 71.45900

Int. Cl. F15b *1/02*

U.S. Cl. 60—413 **20 Claims**

In this power plant for self-propelled vehicles two pipelines are inserted between a high-pressure tank and a low-pressure tank containing hydraulic fluid. A hydraulic motor is inserted in the first pipe line and is adapted to actuate the driving shaft of the vehicle through a freewheel coupling. A motor-pump unit is inserted in the other pipe line. This motor-pump unit has a relatively low-rated power output and is continuously



operating at the same speed. This invention is advantageously applicable to automotive vehicles intended for service requiring frequent stops.

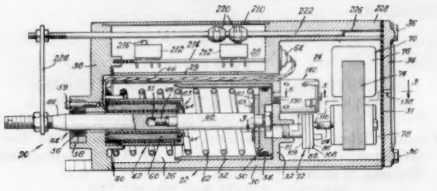
3,828,556
HYDRAULIC ACTUATOR

William F. Nolden, Dallas, Tex., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 26, 1973, Ser. No. 326,855

Int. Cl. F15b *11/12, 15/18*

U.S. Cl. 60—432 **16 Claims**



A hydraulic actuator is constructed in an enclosed housing having an internal wall member which divides its interior into forward and rear chambers. An elongated actuator element is slidably supported in the forward chamber with its forward nose portion extending outwardly through an opening in the wall of the housing. A piston is transversely supported on the rear end portion of the actuator element and is in slidable sealing engagement with a cylindrical wall contained within the forward chamber to define an expandable chamber with this cylindrical wall and the internal wall member. A spring means constantly urges the piston towards the internal wall member. Pump means contained in the rear chamber introduces a fluid under pressure through a passageway formed through the internal wall member into the expandable chamber to force the piston and associated actuator element outwardly of the housing to an extended position. The relative location of the actuator element is detected by a position sensing means which provides a variable control signal in response to the movement of the actuator element for energizing the pump means.

3,828,557
ELECTRIC GENERATING APPARATUS CONVERTING THE PUSHING ACTION OF WAVES INTO ELECTRICAL POWER

Ashton Mochel, Houston, Tex., assignor to Ocean Power Generation, Inc., Houston, Tex.

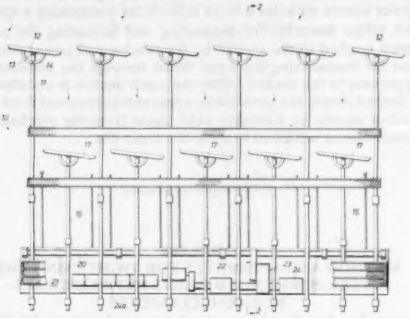
Filed Jan. 17, 1973, Ser. No. 324,563

Int. Cl. F03g *7/00*

U.S. Cl. 60—503 **29 Claims**

An apparatus which forms electrical power from the pushing action of waves wherein the waves are intercepted by a boom mounted tee head which incorporates a metal framework supporting a number of shutters, the shutters intercepting the forward motion of a wave but being alternately released to hinge or pivot so as to make the tee head trans-

parent to wave action on return to an extended position on said boom, said booms supported by an onshore structure which includes a drive shaft extending along the shoreline, the drive shaft being rotated by a plurality of such booms, and the drive shaft being extended to a substantial flywheel which is



connected to an electric generator. All of the apparatus is mounted on a carriage which moves up and down the shore. The booms are rotated about an axis to raise and lower the tee head to accommodate variations in wave action, tide, seasons of the year and the like.

3,828,558

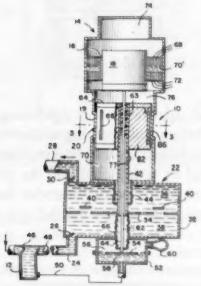
MEANS AND METHOD FOR PREVENTION OF PISTON CREEP IN FREE-PISTON RECIPROCATING DEVICE

William T. Beale, Athens, Ohio, assignor to Research Corporation, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,656

Int. Cl. F02g *1/04*

U.S. Cl. 60—520 **9 Claims**



A free-piston motion device is provided having means associated with either the cylindrical surface of the free-piston or with its co-acting cylinder or both to maintain the mid-point of the stroke of the piston in a predetermined relation to its cylinder during reciprocation of the piston.

3,828,559

TEMPERATURE RESPONSIVE CONTROL DEVICE

Sidonius Volkert Siemensma, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

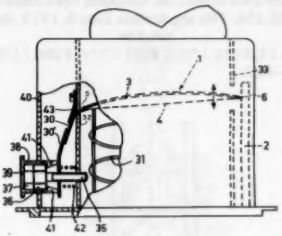
Filed Nov. 4, 1971, Ser. No. 195,747

Claims priority, application Netherlands, Nov. 4, 1970, 7016113

Int. Cl. F03g *7/06*; **A47j** *27/62*

U.S. Cl. 60—529 **6 Claims**

A temperature responsive control device used in toasters and the like, has a thermosensitive element comprising a rod of a material having a very low coefficient of thermal expansion and a thin strip made of a material having a high coefficient of thermal expansion. The thin strip is held in a stressed condition between the ends of the resiliently curved rod. The



element may be clamped at one end, the movement of the other end being used for switching purposes. Because of the small heat capacity of the thin strip the element will rapidly respond to changes in the ambient temperature.

3,828,560

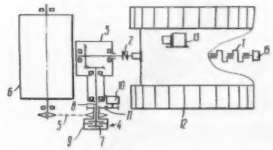
SELF-PROPELLED MACHINE WITH A DRIVEN WORK-PERFORMING MEMBER

Grigory Artemovich Larjukhin, Mikroraion Serelryanka, 27 kv. 74, Moskovskaya oblasti, poselok Pravda; Valentin Vasilievich Chernyshev, Nikrasovskaya ulitsa, 28, Pushkino Moskovskoi oblasti; Vladislav Iosifovich Nikitin, ulitsa Lesnaya 64, kv. 26, Pushkino Moskovskoi oblasti; Jury Mitrofanovich Serikov, Institutskaya ulitsa, 13, kv. 2, Pushkino Moskovskoi oblasti, and Vyacheslav Georgievich Kosinov, Institutskaya ulitsa, 10, kv. 11, Pushkino Moskovskoi oblasti, all of U.S.S.R.

Filed Mar. 5, 1973, Ser. No. 338,225

Int. Cl. B62d *55/00*

U.S. Cl. 60—709 **2 Claims**



A self-propelled machine with a driven work-performing member includes a prime mover rotating the work-performing member through a transmission including a torque-limiting safety clutch of which the driven part is positively connected with the shaft of a liquid pump. The chassis of the machine is driven by a hydraulic motor communicating via a supply conduit with this liquid pump. If the work-performing member should get jammed in operation, the shaft of the liquid pump discontinues its rotation, whereby the supply of the working liquid under pressure to the hydraulic motor is also discontinued, and the machine is brought to a halt.

3,828,561

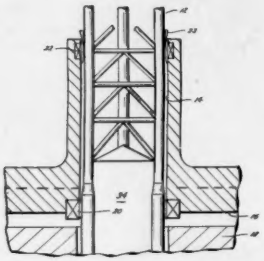
DRILLING PLATFORM

William H. Moore; George T. Richardson, and Floyd T. Pease, all of Houston, Tex., assignors to The Offshore Company, Houston, Tex.

Continuation of Ser. No. 202,350, Nov. 26, 1971, abandoned, which is a division of Ser. No. 819,623, April 28, 1969, Pat. No. 3,628,336. This application June 8, 1973, Ser. No. 368,236

Int. Cl. E02b *17/00*; F16l *37/14*; F16b *12/40*

U.S. Cl. 61—46.5 3 Claims



A floating vessel suitable as a drilling platform in which the vessel has legs extending therethrough which in their upper position are tightly held by the vessel and each leg includes a footing which can be secured thereto or to the vessel when the legs are lowered to raise the vessel into operating position to provide the lower end of the legs with an extended bearing surface for engagement with the bottom.

3,828,562

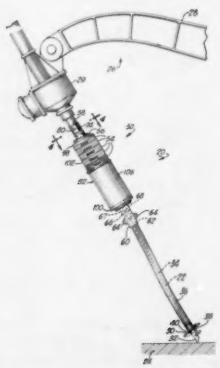
METHOD AND APPARATUS FOR INSTALLING ANCHORS

Stephen Anthony Petres, Forest Park, Ill., assignor to Joslyn Manufacturing and Supply Company, Chicago, Ill.

Filed Nov. 17, 1972, Ser. No. 307,548

Int. Cl. E02d *5/80*; G01l *3/02*

U.S. Cl. 61—53.5 17 Claims



A method and apparatus for installing an anchor utilize the rotational power and the axial thrust from a mechanical power source. The novel method and apparatus are particularly adapted for installing an earth anchor of the type having at least one helical screw portion attached to a polygonally shaped hub portion and having an elongated portion extending from the hub portion and include the placement of an elongated drive tube for telescopically receiving the elongated portion extending from the hub portion of the anchor in engagement with the hub portion. An elongated shear pin is utilized to securely retain the anchor in the installation apparatus. An adapter for connecting the drive tube to the mechanical power source includes a force transducer comprising a spring and spline assembly for measuring and indicating the axial thrust applied to the anchor by the mechanical power source and for transmitting the axial thrust through the installation apparatus to the anchor. After the earth anchor is installed to a desired depth, the installation apparatus is removed from the anchor merely by a reverse axial thrust from the mechanical power source sufficient to shear the shear pin.

3,828,563

METHOD AND APPARATUS FOR TIGHTENING THE WATER-SUBMERGED JOINTS BETWEEN WALL-FORMING ELEMENTS

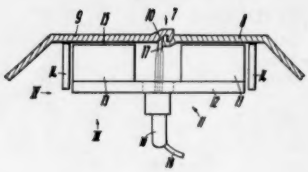
Heinz Saucke, Hamburg, Germany, assignor to Weill & Reineke GmbH, Hamburg, Germany

Filed Aug. 8, 1972, Ser. No. 278,875

Claims priority, application Germany, Aug. 11, 1971, 2140250

Int. Cl. E02d *5/00*

U.S. Cl. 61—60 5 Claims



A method and apparatus for tightening the water submerged joints between wall forming elements, particularly the interlocking joints of steel sheet pilings, characterized by the use of a compound to be injected into the joint and curing inside said joint to an elastic body but under the pressure against which the tightening has to be effected into a sufficiently stable body.

3,828,564

CLOSED REFRIGERANT CYCLE FOR THE LIQUEFACTION OF LOW-BOILING GASES

Anton Spies, Icking; Alfred Stephan, Munich, and Alfons Sellmaier, deceased, late of Munich, all of Germany (by Anne-Rose Sellmaier, Co-Heir), assignors to Linde A.G., Hollriegelskreuth, Germany

Filed Mar. 1, 1971, Ser. No. 122,605

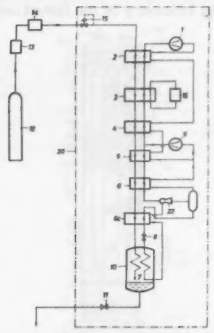
2009401

Int. Cl. F25j *1/00*

U.S. Cl. 62—9 4 Claims

In a process for the liquefaction of a cryogenic gas such as helium, comprising cooling and liquefying said gas by indirect heat exchange with a refrigerant circulating in a closed refrigeration cycle, the improvement comprising conducting said heat exchange with the refrigerant from a single refrigerant cycle, said refrigerant being subjected to both en-

gine expansion and at least partially isenthalpic expansion, whereby the refrigerant is cooled sufficiently to effect



liquefaction of all the cryogenic gas in a single pass, thereby avoiding the necessity of additional compressor or purification capacity for recycled gas.

3,828,565

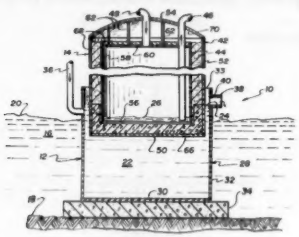
OFFSHORE LIQUID STORAGE FACILITY

John Stanton McCabe, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 333,218, Feb. 16, 1973, abandoned. This application Sept. 28, 1973, Ser. No. 401,858

Int. Cl. F17c *1/02*

U.S. Cl. 62—45 **11 Claims**



An offshore liquid storage facility includes a receiver tank having an open top and being mountable on the sea floor with its top above sea level, means for maintaining water or other liquid in the receiver tank at a predetermined level above sea level, a liquid storage tank received in the receiver tank and movable telescopically up and down therein, and means for alternately supplying a liquid to the storage tank for storage therein and withdrawing the liquid therefrom, whereby the storage tank is held captive in the receiver tank while water or other liquid may be maintained in the receiver tank at the predetermined level for stabilizing the facility, and variations in buoyancy during liquid withdrawal and supply are accommodated by up and down gravity movement of the storage tank in the liquid maintained in the receiver tank.

3,828,566

DRY ADSORPTION REFRIGERATION SYSTEM

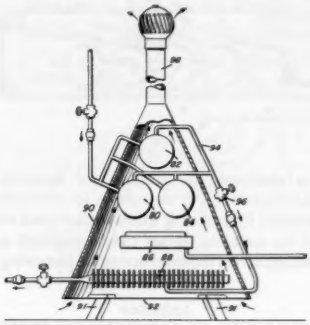
Charles W. Wetzel, 2237 Oriole St., New Orleans, La. 70122

Filed Feb. 5, 1973, Ser. No. 329,821

Int. Cl. F25b *17/08*

U.S. Cl. 62—143 **11 Claims**

Dry adsorption refrigeration apparatus includes a plurality of compression/heating units packed with silica gel, a condenser, an expansion valve and an evaporator, which apparatus can utilize waste energy, such as internal combustion exhaust energy, to excite and operate the refrigeration cycle. The apparatus operates at temperatures and pressures approaching the critical values for the refrigerant, thereby allowing condensation to take place at ambient temperatures by natural convective currents, i.e., without fans or cooling



liquids. Convective cooling can be enhanced by arranging the apparatus in a generally conical configuration wherein the condensing coils are disposed adjacent the base of the cone and the compression/heating units are situated above the condenser coils such that ambient air enters the bottom of the cone, flows upward over the coils and units and exits through a flue opening in the apex of the cone.

3,828,567

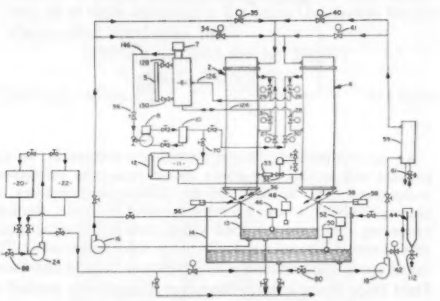
LEVEL CONTROLLER AND LIQUID REMOVER FOR A REFRIGERATION SYSTEM

Michael Lesczynski, Chittenango, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 1, 1973, Ser. No. 356,277

Int. Cl. F25b *41/04*

U.S. Cl. 62—160 **3 Claims**



An apparatus in a refrigeration circuit for removing liquid entrained in refrigerant vapor on the suction side of the compressor and for controlling the level of refrigerant in the evaporator. The apparatus includes a chamber for holding liquid refrigerant at its lower portion, and for containing refrigerant vapors above the liquid for discharge to the compressor. The level of liquid refrigerant in the chamber is maintained at the level of liquid refrigerant in the evaporator, and a valve in the refrigerant line from the condenser to the evaporator is regulated according to the liquid refrigerant level in the apparatus to maintain a predetermined refrigerant level in the evaporator.

3,828,568

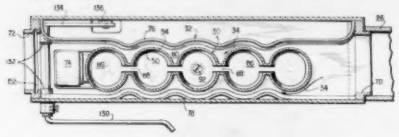
ICE MAKER

Lauren L. Frazier, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 27, 1972, Ser. No. 318,715

Int. Cl. F25c 1/06

U.S. Cl. 62—186 **6 Claims**



There is disclosed an icemaker for installation in a household refrigerator. An increase in ice production capability is provided by providing a cold air flow path around the exterior of the ice mold. Means can be provided to prevent cold air passage across the mold during ice harvesting.

3,828,569

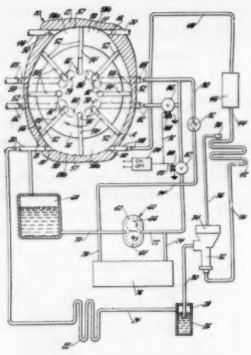
AUTOMOTIVE AIR CONDITIONING SYSTEM

Thomas W. Weisgerber, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 11, 1973, Ser. No. 378,228

Int. Cl. F25b 1/00

U.S. Cl. 62—227 **3 Claims**



An air conditioning system including a condenser, an expansion means, an evaporator and a vane-type refrigerant compressor. The housing of the compressor encloses an oblong chamber in which a rotor member is turned. Radially extending vanes are mounted within slots in the rotor which extend across the radial space between rotor and housing. The vanes are in fluid contact with undervane control chambers. Fluid force in the control chambers is selectively applied to the vanes to press them across the radial space into engagement with the opposite wall of the compressor, whereby compression chambers are formed between adjacent vanes.

3,828,570

HEAT EXCHANGE APPARATUS

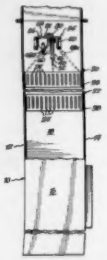
Robert C. Stutz, Kenmore, N.Y., assignor to Niagara Blower Company, Buffalo, N.Y.

Filed May 24, 1973, Ser. No. 363,515

Int. Cl. F25d 21/00

U.S. Cl. 62—282 **9 Claims**

In cooling a gas, such as air, the finned cooling coils are flooded with a recirculated organic antifreeze medium to prevent icing of the coils. At very low temperatures, say −40° F, this medium becomes very viscous and difficult to apply without insufficiencies in some areas and overflooding in other areas. Either condition, results in obstruction and reduction of air cooling efficiency of the finned coils. The present



invention provides moving spray nozzles applying the viscous antifreeze medium in a pattern avoiding both of these conditions. Preferably the spray nozzles are oscillated and discharge flat fan-shaped, overlapping streams. Preferably they are turbine-driven by a small by-passed part of the pressurized medium supplied to the nozzles.

3,828,571

COVER FOR MICROTOME AND ULTRAMICROTOME FREEZING CHAMBER

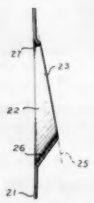
Gunther Lechner, Vienna, Austria, assignor to C. Reichert Optische Werke, AG, Vienna, Austria

Filed Sept. 5, 1973, Ser. No. 394,593

Claims priority, application Austria, Sept. 6, 1972, 7638/72

Int. Cl. B26d 7/08

U.S. Cl. 62—320 **9 Claims**



A transparent cover having a conical depression with an elliptical opening to control the passage of coolant gas from the freezing chamber of a microtome or ultramicrotome provides improved cooling with increased versatility and permits microtome techniques to be practiced heretofore not considered practical.

3,828,572

MACHINE FOR PRODUCING FROZEN CONFECTIONS

Thomas F. Calim, P.O. Box 158, Jackson Center, Ohio 45334

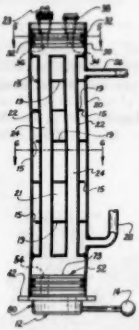
Filed May 2, 1973, Ser. No. 356,400

Int. Cl. F25c 7/10

U.S. Cl. 62—340 **2 Claims**

A machine for producing frozen confections such as ice creams or the like, wherein liquid mix is delivered from a storage tank through a freezing chamber to a draw-off valve from which the frozen mix is dispensed to cones or cups. The machine is characterized by a draw-off or dispensing valve construction that comprises relatively thin discs positioned in intimate relationship with the freezing chamber so as to main-

tain the valve components and mix passing through in a frozen state. The dispensing valve construction is further characterized by a structural arrangement that provides large volumetric discharge of frozen mix at the threshold of opening of the valve.



3,828,573

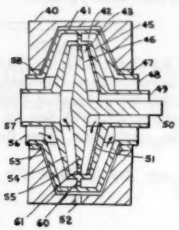
HEATING AND COOLING WHEEL

Michael Eskeli, 6220 Orchid Ln., Dallas, Tex. 75230

Continuation-in-part of Ser. No. 216,938, Jan. 11, 1972. This application June 20, 1973, Ser. No. 371,939

Int. Cl. F25b *3/00*

U.S. Cl. 62—401 **9 Claims**



A method and apparatus for producing heating or cooling by passing two fluids in heat exchange relationship with each other within a rotating rotor wherein said fluids are compressed to a higher pressure. The first fluid is a compressible fluid, such as air, which when compressed will also have a temperature increase; the second fluid may be either a compressible fluid or may be a non-compressible fluid, which when compressed may not have a temperature raise or the temperature raise for said second fluid will be less than for said first fluid. Heat then will be transferred from said first fluid to said second fluid, so that when said fluids are discharged from said rotor, said first fluid will be at lower temperature at exit than it was at entry; also, said second fluid will leave said rotor at higher temperature than said fluid entered. For the first fluid, air or other compressible gases may be used; said air may be at ambient temperature. For said second fluid, air, water or other fluids may be used; said water or air may be at ambient or natural temperature. Said apparatus may be used for air conditioning where both fluid streams are air; also, it may be used to heat water.

3,828,574

ROTARY-INJECTOR TYPE DISTRIBUTOR

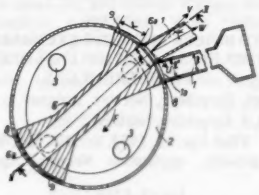
Jean Louis Boy-Marcotte, Orsay; Jacques Louis Paul Simonnet, Gif sur Yvette; Philippe Albert Hippolyte Marchal, Boulogne; Jean Prudent Fernand, and Rene Verrien, both of Paris, all of France, assignors to Bertin & Cie, Plaisir France and Entreprise De Recherches Et D'Activites Petrolieres Elf, Paris, both of, France

Filed Oct. 11, 1972, Ser. No. 296,643

Claims priority, application France, Oct. 15, 1971, 71.37113

Int. Cl. F25b *9/00*; **F16k** *11/00*

U.S. Cl. 62—467 **7 Claims**



The invention comprehends a rotary-injector type distributor interposed between a pressure fluid intake and one or more receiving pulse tubes, characterized in that the rotary injector has on either side of its ejection orifice a leading edge and a trailing edge, as considered in the direction of rotation, of an angular extent such that the leading edge can cover the receiving-tube entry past which the injector will move, the leading edge uncovering such entry only in proportion as the injector ejection orifice moves past the entry, and in turn the trailing edge gradually covers the entry in proportion as the injector ejection orifice departs from the entry, to ensure in both cases that in the tube-filling phase the fluid is not exhausted from the tube before having been operative therein.

3,828,575

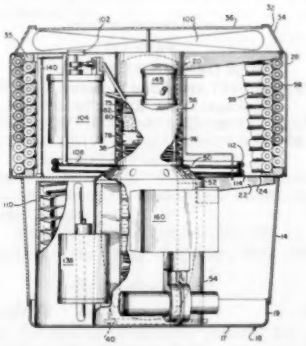
COMPACT HEATING AND COOLING SYSTEM

Norman D. Malcosky; Ronald H. McLean, both of Columbus; Kanwal N. Singh, Westerville, and Chung M. Auh, Columbus, all of Ohio, assignors to Columbia Gas System Service Corporation, Wilmington, Del.

Filed Apr. 13, 1973, Ser. No. 350,822

Int. Cl. F25b *15/04*

U.S. Cl. 62—476 **17 Claims**



A compact absorption refrigeration unit has a central mounting core containing a generator about which substantially all of the components of the refrigeration system are

mounted in a predetermined configuration. The generator has heat transfer fins secured to its surface which have a predetermined configuration that allows the fins and generator to absorb heat at the optimum rate at which heat can be transferred thereto without damage to the fins. The unit also includes an evaporator having a centrally positioned reservoir and a helical passageway providing a flow path for a heat exchange medium and containing a fluted helical heat exchanger tube which provides a countercurrent refrigerant, thereby to chill said heat exchange medium. In one embodiment of the invention the unit is provided with a compact boiler for use in heating the heat exchange medium, thereby permitting the unit to be selectively operated for both heating and cooling.

3,828,576

COMBINED BOILER AND HEAT EXCHANGER FOR AN ABSORPTION REFRIGERATION UNIT OPERATING ON INDIFFERENT GAS

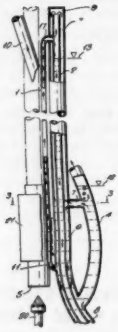
Hakon Eidet, Sarpsborg, Norway, assignor to K. Pettersens Sonner A/S, Sarpsborg, Norway

Filed Apr. 13, 1973, Ser. No. 350,786

Claims priority, application Norway, Apr. 20, 1972, 1392/72

Int. Cl. F25b *15/10*

U.S. Cl. 62—490 **1 Claim**



A combined boiler and heat exchanger for an absorption refrigeration unit operating with indifferent gas, in which a circulation pump transports vapour admixed with liquid to a stand pipe in a vapour tube, and vapour through the vapour tube and a rectifier outside the boiler to the condenser of the unit.

3,828,577

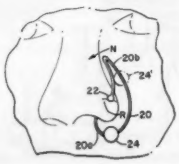
NOSE ORNAMENT AND SACHET

Grover Haynes, 3317 Army, San Francisco, Calif. 94110

Filed Apr. 19, 1972, Ser. No. 245,464

Int. Cl. A44c *25/00, 7/00*

U.S. Cl. 63—2 **7 Claims**



A nose ornament mountable to an unpierced nose is provided in the form of an open loop. The ends of the loop preferably terminate in small spheres spaced apart a distance adapted to permit engagement of one of the outer nostril walls therebetween. The bight of the loop may be formed in any desired decorative configuration. In one embodiment, an odorous element or sachet is carried on the bight of the nose ornament and thereby suspended adjacent the wearer's nostril.

3,828,578

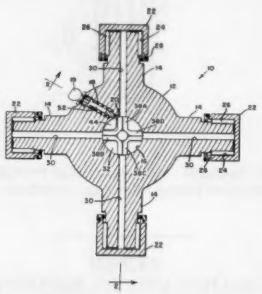
U-JOINT LUBRICATION SPIDER

Saul Herscovici, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 10, 1973, Ser. No. 359,206

Int. Cl. F16n *7/36*

U.S. Cl. 64—17 A **5 Claims**



A universal joint spider includes a central recess which is in communication with bearing chambers contained on the outer end of each of the pins of the spider. Received in the recess is a lubrication selection member which is automatically movable to successively place individual bearing chambers in fluid communication with a grease inlet port so that the bearing chambers can be individually greased.

3,828,579

CENTRIFUGAL MECHANISM

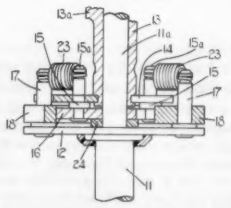
Walter Joseph Groom, Sutton Coldfield, England, assignor to Joseph Lucus (Electrical) Limited, Birmingham, England

Filed Jan. 15, 1973, Ser. No. 323,531

Claims priority, application Great Britain, Jan. 15, 1972, 2021/72

Int. Cl. F16d *5/00*

U.S. Cl. 64—25 **2 Claims**



A centrifugal mechanism, for an internal combustion engine ignition distributor, includes a driven shaft and a cam shaft coupled to the driven shaft and having its axis coextensive with the driven shaft axis. Secured to the cam shaft is a first plate, and secured to the driven shaft is a second plate generally parallel with the first plate. A control weight is pivotally mounted on the second plate for movement about an axis parallel to the axis of the driven shaft and the control weight engages a cam carried by the first plate. Positioned between the first and second plates is a moulded synthetic

resin spacer which maintains the first and second plates spaced apart by predetermined distance. In addition, the spacer is engaged by the control weight in the rest position of the weight.

3,828,580

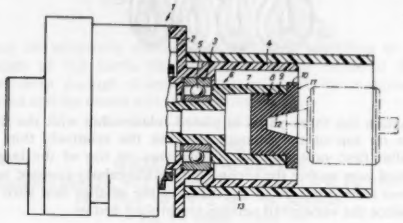
COUPLING CONSTRUCTION

Gerhard Armbruster, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Continuation of Ser. No. 139,612, May 3, 1971, abandoned. This application June 21, 1973, Ser. No. 372,407

Int. Cl. F16d *7/02*

U.S. Cl. 64—30 A **6 Claims**



An attachment for transmitting power between a motor-driven tool and an auxiliary tool has a rotary shaft one end portion of which is drivingly connectable with an auxiliary tool and the other end portion of which carries a coupling member of elastomeric material. An end face of the coupling member extends transversely of the axis of rotation of the shaft and is provided with a conical recess into which a rotary component of a motor-driven tool can be inserted so that, when axial pressure is exerted, the rotary component will frictionally engage and transmit power to the coupling member and via the same to the shaft.

3,828,581

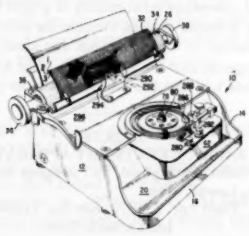
APPARATUS FOR POSITIONING JACKS IN SLOTTED PATTERN WHEEL RINGS ACCORDING TO A PREDETERMINED PATTERN

Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, both of Fla., assignors to The Singer Company, New York, N.Y.

Filed Sept. 15, 1972, Ser. No. 289,393

Int. Cl. D04b *37/04*

U.S. Cl. 66—1 R **9 Claims**



A carriage is provided to carry a paper, card or the like on which a jack position is indicated for each of the slots of pattern wheels to be used in knitting a patterned cloth. Indexing movements are imparted to the carriage (or to a marker or pointer) to successively align consecutive jack indications for a selected wheel with the marker or pointer and also to a rotatably mounted pattern wheel ring in which, jacks are to be set, to consecutively register successive slots of the ring with a jack actuator, the indexing movements being so controlled that each indexing movement of the carriage (or marker or pointer) is accompanied by an indexing movement of the ring, and the jack actuator may be operated according to the indications in alignment with the pointer or marker to set jacks in the wheel.

3,828,582

IMPROVED KNITTING MACHINE EQUIPPED WITH TWO PART NEEDLES

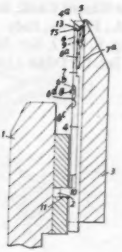
Albert Henry Widdowson, and George William Wells, both of Leicester, England, assignors to Wildt Mellor Bromley Limited, Leicester, England

Filed Aug. 11, 1972, Ser. No. 279,794

Claims priority, application Great Britain, Aug. 28, 1971, 40456/71

Int. Cl. D04b *9/12*

U.S. Cl. 66—13 **15 Claims**



A knitting machine equipped with two-part needles each having a latchless hooked element and a relatively slidable loop-controlling element having a loop retaining shoulder and a point for closing the hook. The hooked element has only one operating butt co-operable with cams of a single cam track. The two elements have abutments for contact with one another to effect movements of the elements together in both directions. Provision is made for lost motion between the elements. The stem of the loop-controlling element of each needle is formed for engagement with means in the machine for holding or restricting movements of the loop-controlling elements at required times.

3,828,583

DEVICE FOR STORING PRE-SELECTED PATTERNS FOR CIRCULAR KNITTING MACHINES HAVING A PLURALITY OF SYSTEMS

Gerhard Hamma, Spaichingen, Wurttemberg, Germany, assignor to Machinenfabrik Spaichingen GmbH, Spaichingen/Wuertt, Germany

Filed May 1, 1972, Ser. No. 249,056

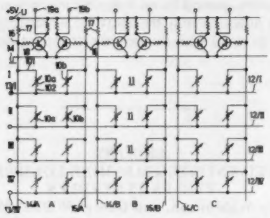
Claims priority, application Germany, May 10, 1971, 2122912

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **6 Claims**

A device for storing preselected patterns for circular knitting machines. The device includes a peg board having openings for receiving differently shaped pegs for each loop of a knitted pattern. The peg board is matrix-like having rows and columns of peg-receiving openings arranged according to loop rows and rods. Each peg-receiving opening has at least

one resistance which is dependent on its corresponding magnetic field, and which is located in the electronic circuit



switching circuit and the magnetic trans-flux of which can be influenced by a peg-like control member which can be inserted in the peg-receiving opening.

3,828,584

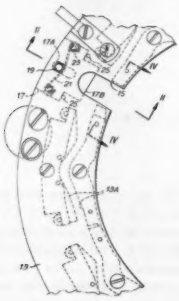
SINKER CAP WITH ACCESS SLOT

Massimo Bianchi, and Gianni Conti, both of Firenze, Italy, assignors to Billi S.p.A., Firenze, Italy

Filed Aug. 8, 1972, Ser. No. 278,726

Int. Cl. D04b *15/06*

U.S. Cl. 66—107 **2 Claims**



A radially elongated access slot extends vertically through an otherwise conventional sinker cap to permit easy withdrawal and replacement of damaged sinkers positioned under the slot without disassembly of machine elements. A retainer plate, resiliently urged in a centripetal direction and slidably attached to the underside of the sinker cap, extends into the area beneath the access slot and provides a stop means limiting centrifugal movement of sinkers and thus prevents inadvertent removal or displacement of sinkers during operation of the machine.

3,828,585

DENIM SOCK AND METHOD OF KNITTING SAME

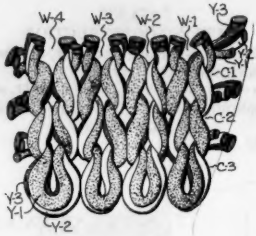
James L. Thorneburg, Statesville, N.C., assignor to Thorneburg Hosiery Mills, Inc., Statesville, N.C.

Filed Nov. 13, 1972, Ser. No. 305,849

Int. Cl. D04b *9/34, 9/46*

U.S. Cl. 66—136 **9 Claims**

Three yarns are knit in plated relationship throughout the major portion of at least the leg of the sock with the first of the yarns being positioned predominantly on the outside, the third of the yarns being positioned predominantly on the inside and the second of the yarns being normally positioned between the first and third yarns but appearing on the outer surface of the sock in portions of irregularly spaced stitch loops to provide a variegated pattern resembling denim. The second yarn is of a different color than the first yarn and is approximately one and one-half times as large as the first yarn while the third yarn is approximately twice as large as the second yarn. The tension and feeding positions of the three yarns are controlled to



maintain the three yarns in plated relationship with the first yarn on top of the second yarn but the relatively thin or smaller first yarn will not always stay on top of the larger second yarn so that the second yarn is irregularly exposed as it moves from one side to the other of the smaller first yarn to produce the variegated pattern resembling denim.

3,828,586

TENSION BAR FOR WARP KNITTING MACHINE

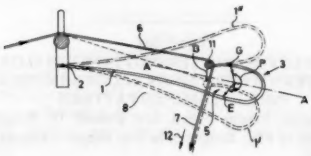
Karl Kohl, 10 Chlorodont Strasse, Obertshausen, Germany (6053)

Filed Mar. 15, 1973, Ser. No. 341,629

Claims priority, application Germany, Mar. 15, 1972, 2212478

Int. Cl. D04b *15/44, 27/12, 27/14*

U.S. Cl. 66—146 **3 Claims**



There is provided a novel form of tension bar for permitting directional change of threads in a warp knitting machine. The novel device comprises substantially of a rigid bar, plurality of substantially J-shaped springs wherein the short end of the "J" spring is attached to the carrier bar and means for anchoring the "J" springs so that the shafts thereof lie in a substantially common plane to which the axis of the carrier bar is parallel.

3,828,587

FABRIC TREATMENT APPARATUS

William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.

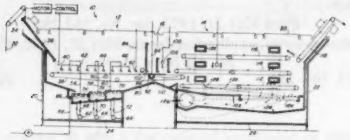
Filed Apr. 3, 1972, Ser. No. 240,602

Int. Cl. B05c *5/00*

U.S. Cl. 68—3 SS **6 Claims**

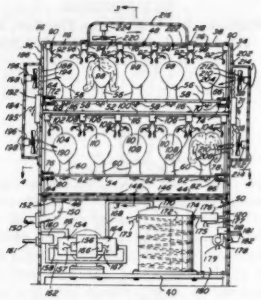
A running fabric web is fed in flat tubular or openwidth form by means of an openwork conveyor belt below a battery of spray bars which apply a liquid such as a scouring solvent onto the fabric. The spray bars are provided with arcuate baffles which convert a spray discharge into a continuous sheet of liquid which pours onto the web. Excess liquid is then removed by a suction box disposed under the belt. A pair of tapered curtains trails along the top of the belt on either side

thereof to cover the suction box slot beyond the edges of the fabric which forces the suction action through the fabric. The curtains are wound on a reefing roller by which the curtains



may be selectively extended or retracted according to the width of the fabric being processed. The fabric is then delivered through a drying chamber where the material is dried and the excess solvent is recovered.

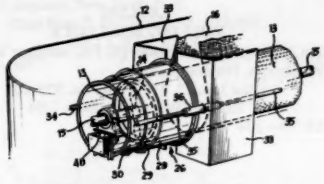
3,828,588
WIG CLEANING DEVICE
Theodore Duncan, 902 Burnside Rd., Sharon Hill, Pa. 19079
Filed Nov. 10, 1972, Ser. No. 305,628
Int. Cl. B05b *13/04*
U.S. Cl. 68—5 C **10 Claims**



A wig treatment machine including a wig treatment chamber. A pair of wig holding shelves is disposed within the chamber. Each shelf includes plural wig holding forms mounted thereon. A plurality of rotatable spray heads is provided in the chamber adjacent the wig forms. The machine also includes means for providing shampoo, water and a conditioning mist to the spray heads. The machine also includes means for drying the wigs within the chamber.

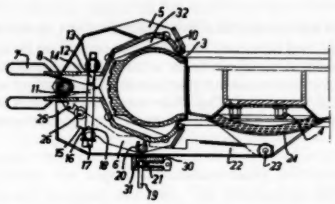
3,828,589
MACHINERY FOR TREATING TEXTILES IN SHEET FORM WITH A FLUID MEDIUM
Robert Alan Collinge, Rochdale, England, assignor to F. Smith & Co. (Whitworth) Limited Great Britain
Filed Oct. 26, 1972, Ser. No. 301,180
Claims priority, application Great Britain, Oct. 30, 1971, 50563/71
Int. Cl. B05c *3/132*
U.S. Cl. 68—158 **4 Claims**

The machinery comprises a rotatable perforated drum with an impeller inside the drum to cause a fluid to pass through the perforations and through a textile web on the drum to treat the web, such as cleaning it. In order to deal efficiently with webs of varying widths in a simple manner an adjustable shroud is provided in the form of a sleeve which can be extended and withdrawn axially of the drum to blank off or open up perforations in the drum. Preferably the sleeve is of telescopic form and barrier means are provided to control the flow of treat-



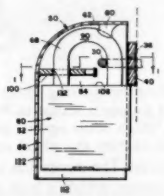
ment fluid to resist any tendency for the web to lift, at its edges, from the drum and to flatten edge curl on textile webs arriving at the drum.

3,828,590
WHEEL CLAMP
Robert Thiebault, Paris, France, assignor to Prefecture De Police
Filed Jan. 27, 1972, Ser. No. 221,290
Int. Cl. E05b *73/00*
U.S. Cl. 70—19 **2 Claims**



A clamp for positively holding a motor vehicle, notably in case of infringement of traffic regulations, by gripping a wheel thereof, which comprises essentially a pair of inner and outer jaws formed with handle extensions and having an arm pivotally mounted to the outer jaw, for carrying the wheel hub covering means and prevent the removal of the wheel nuts, a screw-threaded rod pivoted to the outer jaw and engaged by a nut, an aperture in said arm and a slot extension of said diameter greater than said rod but smaller than said nut, whereby the arm can be tightened between said outer jaw and said nut when said arm is moved perpendicularly to said rod, and safety lock means pivotally mounted and adapted in their locked position to cover the aforesaid aperture and slot. (FIG. 2).

3,828,591
LOCK ASSEMBLY
Commodore E. Beaver, Council Bluffs, Iowa
Filed Aug. 14, 1972, Ser. No. 280,550
Int. Cl. E05b *67/38*
U.S. Cl. 70—56 **6 Claims**



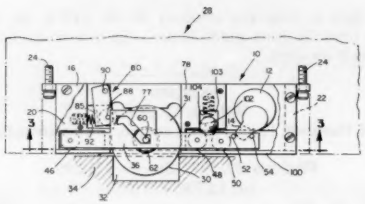
A guarded lock assembly in which a guard surrounds three sides of a padlock and is attached to its shackle, the assembly

having a combination rib and barrier interconnecting the sides of a guard to prevent them from being pried apart by a crowbar.

3,828,592
ROLLING BOLT LOCK

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Filed Jan. 22, 1973, Ser. No. 325,607
Int. Cl. E05b *65/06;* **E05c** *1/06*
U.S. Cl. 70—134 **10 Claims**

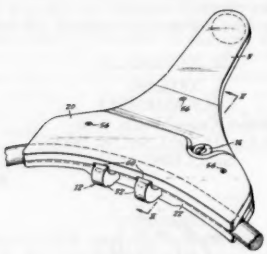


A lock has a cylindrical bolt rotatable about its axis which is advanced and retracted in a plane transverse to its axis by a slide mechanism operable in a direction transverse to the direction of movement of said bolt along tne path of advancement and retraction. The slide mechanism coacts with the axial mounting means of the bolt to prevent jimmying of the lock.

3,828,593
ANTI-THEFT DEVICE FOR VEHICLES

Robert Benjamin Bolton, 14, Middle Dr., Ponteland, England

Filed Mar. 19, 1973, Ser. No. 342,624
Claims priority, application Great Britain, Mar. 24, 1972, 14005/72
Int. Cl. B60r *25/02*
U.S. Cl. 70—209 **6 Claims**

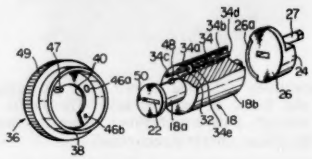


A device for holding the steering wheel of a vehicle against rotation is arranged to grip a sector of the wheel, and has a projecting element which abuts against part of the vehicle if any attempt is made to turn the wheel sufficiently to enable the vehicle to be driven. The device has a channel to receive the steering wheel sector, which is held therein by retaining means which is movable towards and away from the channel, and which can be locked in a retaining position by suitable locking means, but is releasable so that the device may be removed from the wheel and from the vehicle.

3,828,594
LOCKING DEVICE FOR A MOTOR VEHICLE STEERING MECHANISM

Yukio Yamamoto, Ohmiya, Japan, assignor to Nissan Motor Company, Limited, Yokohama and Kanto Seiki Company, Limited, Ohmiya, Saitama Prefecture, both of, Japan

Filed May 21, 1973, Ser. No. 362,298
Claims priority, application Japan, May 31, 1972, 47-53957
Int. Cl. B60r *25/04*
U.S. Cl. 70—252 **19 Claims**

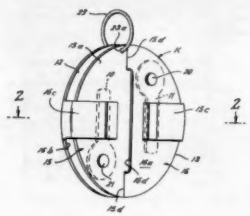


A key operated mechanism with one locked position and at least one unlocked position, by which it is not possible to return from an unlocked position to a locked position using the key until a mechanical member is actuated, all operations capable of being performed with one hand.

3,828,595
KEY HOLDER

Donzle W. Williams, Jr., 4126 Drake, Houston, Tex. 77005

Filed Sept. 1, 1972, Ser. No. 285,874
Int. Cl. A47g *29/10*
U.S. Cl. 70—457 **6 Claims**



A multi-compartment key holder including a plurality of sheets of flexible material that cooperate to form first and second key holding compartments, a key holder mounted in each compartment; and, connecting means connecting the compartments together to form a multi-compartment key holder that is easily and conveniently confined to a pocket, purse or the like. In one aspect of the invention, releasable means allow the first and second compartments to be released from connection to each other to provide separate key holding units.

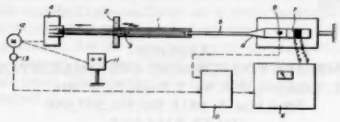
3,828,596
AUTOMATIC CONTROL SYSTEM FOR DRAW-FORMING WITH VIBRATORY ENERGY

Genichi Usui, Zushi, and Isamu Komine, Yokohama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1973, Ser. No. 324,416
Claims priority, application Japan, Dec. 29, 1971, 46-1324
Int. Cl. B21c *3/00*
U.S. Cl. 72—8 **4 Claims**

In a tube-drawing system employing vibratory energy, many difficulties appear as a diameter of said tube, e.g. a charttering

mark or a seizure on the surface of said tube, which is based on local friction heat. These phenomena are avoided by an au-



tomatic control of which the ratio of amplitude of vibrating energy to tube-drawing speed is adjusted to be in a suitable range of from 1.6 to 11.0.

3,828,597

GEAR WORKING TOOL

Herbert Loos, Munich, Germany, assignor to Carl Hurth Maschinen-und Zahnradfabrik, Munich, Germany

Filed Jan. 18, 1973, Ser. No. 324,846

Claims priority, application Germany, Jan. 22, 1972, 2203098

Int. Cl. B21h *5/02*

U.S. Cl. 72—102 **4 Claims**

A gear or rack-shaped tool is provided with serrated teeth wherein the serrations extend from the addendum to the dedendum of the teeth in any given tooth surface. The serrations define ribs which are of such width and so arranged that throughout the effective width of the tool the ribs in any plane normal to the tool axis and taken around the full circumference thereof will total an area equal to the corresponding area of the ribs in any other such plane. In the illustrated embodiments this is accomplished by providing ribs and grooves which are arranged on circumferentially successive teeth in a manner axially offset with respect to one another and wherein (*a*) said offsetting is such that the edges of ribs on circumferentially spaced teeth are at least substantially coplanar with respect to each other, (*b*) the magnitude of such offsetting is a sub-multiple of the combined width of a serration and a rib, preferably, (*c*) said offsetting is of a magnitude which is a submultiple of the axial dimension of said ribs. Further, all of said ribs in such embodiments are of equal dimension in an axial direction with respect to each other, all of said serrations are of equal dimensions in an axial direction with respect to each other, and the serrations themselves are of a dimension in axial direction which is equal to the corresponding dimension of the ribs. In one illustrated embodiment, the edges of adjacent ribs on successive teeth form a helical curve circumferentially around a tool whereas in the other illustrated embodiment ribs which are on teeth circumferentially spaced by two or more tooth positions are helically aligned and the corresponding ribs on intervening teeth define similar axially spaced helical lines. Of course, where the tool is a rack instead of a gear, then the lines above referred to as helical become angling lines across the width of the rack. Thus, the several ribs will bear upon each element of each workpiece tooth an equal number of times and, insofar as possible within the tolerances at which the workpiece is machined without either gap or overlapping.

3,828,598

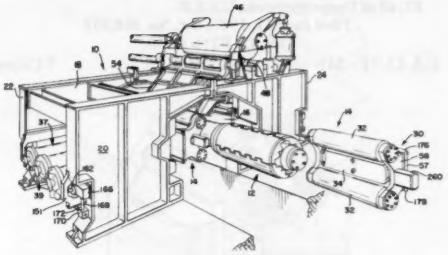
WRAPPING ROLL ADJUSTMENT FOR A STRIP COILING MACHINE

John Gross, Salem, Ohio, assignor to Gulf & Western Manufacturing Company, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,806

Int. Cl. B21c *47/00*

U.S. Cl. 72—148 **19 Claims**



A strip coiling machine is disclosed comprising a frame, a mandrel rotatably supported for receiving sheet metal to be coiled thereon, and pairs of rotatable wrapper rolls parallel to the mandrel and cooperable therewith to form the inital wraps of a coil of sheet metal on the mandrel. Each pair of wrapper rolls is supported by a carriage movable transversely of the mandrel axis, and the wrapper rolls each have opposite ends independently supported with respect to the corresponding carriage for adjustment of the position of the opposite ends of the wrapper roll relative to the mandrel. The adjustable support provides for aligning, or intentionally misaligning the mandrel and wrapper roll axes. The mechanism further includes apron members mounted on the carriage and pivotal relative to the mandrel for cooperation with the wrapper rolls and mandrel to form the initial wraps of a coil. The pivot axes of the aprons are adjustable relative to the corresponding carriage to provide for adjustment of the apron face relative to the outer surface of the mandrel.

3,828,599

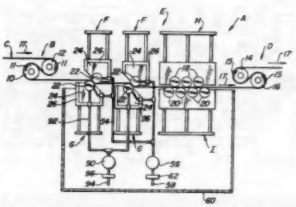
APPARATUS AND METHOD FOR LEVELING METAL STRIP

David A. Withrow, Willoughby, Ohio, assignor to Production Machinery Corporation, Mentor, Ohio

Continuation of Ser. No. 196,985, Nov. 9, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,559

Int. Cl. B21d *1/05*

U.S. Cl. 72—163 **3 Claims**



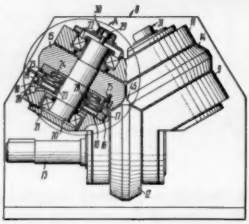
An apparatus and method for leveling elongated metal strip includes pulling means for pulling the strip under tension in a longitudinal direction and flexing means for imparting flexing forces to the strip. The flexing means includes fluid pressure means for producing the flexing forces.

3,828,600

ROLL STAND

Gleb Pavlovich Borisenko, ploschad Oktyabrskaya, 7, kv. 28; Jury Sergeevich Chernobrivenko, ulitsa Dzerzhinskogo, 16, kv. 7; Jury Kutsov, ulitsa Kirova 8, kv. 9; Arkady Alexeevich Gorbanev, ulitsa Serova 1a, kv. 4; Oleg Nikolaevich Kukushkin, ulitsa Suvorova 13, kv. 21; Vladimir Nikolaevich Krivobokov, ulitsa G. Pushkina; Grigory Gavrilovich Pobegailo, pereulok Uritskogo, 11, kv. 3, and Vitaly Dmitrievich Nashivanko, ulitsa G. Pushkina, 1b, kv. 57, all of Dnepropetrovsk, U.S.S.R.

Filed June 11, 1973, Ser. No. 368,575
Int. Cl. B21b *35/00*
U.S. Cl. 72—249 **7 Claims**



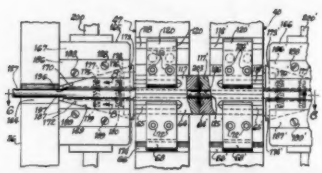
The roll stand comprises a frame with pads housing one drive working roll connected to a drive and adapted to deform a bar being rolled, and idle rolls connected to drives to be accelerated and to synchronize the rates of rotation thereof with that of the drive working roll. The drives designed to accelerate and synchronize idle rolls are fashioned as combined flange-type non-contact electric motors having armatures which are mounted on the axles of idle rolls, and the stator windings are mounted in the pads of the roll stand, the stator windings of the drives being connected to a.c. supply sources. The present invention has as its objective to increase the speed of rolling of the stand and decrease of its over-all dimensions and weight.

3,828,601

METHOD AND APPARATUS FOR PRODUCING A FINISHED JOINT BETWEEN ENDS OF WIRES, RODS AND THE LIKE

Alfred H. Tessmann, 13761 Joyce Dr., Largo, Fla. 33540

Continuation of Ser. No. 259,495, June 5, 1972, abandoned. This application July 19, 1973, Ser. No. 380,575
Int. Cl. B21f *15/08*
U.S. Cl. 72—334 **21 Claims**



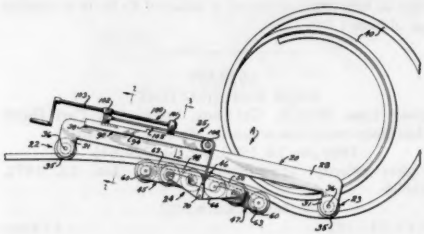
A method and apparatus for producing a finished joint between the ends of wires or rods of like material and sectional size and shape by completely upsetting joined workpieces, thereby to thoroughly remove all heat-affected metal and to effect the establishment of bonds having properties or characteristics which equal or exceed those of the parent material, and which, as completed by the method and apparatus, preserve the uniformity of size, shape and smooth finish of the wires or rods at and adjacent the joint without added manual operations, and to the extent required to avoid having the joint interfere with further operations, such as coating, twisting into cable, insulating or further drawing of the wire or rod.

3,828,602

ASSEMBLAGE FOR FORMING AND STRAIGHTENING

George L. Leithiser, R.D. No. 3, York, Pa. 17404

Filed Mar. 5, 1973, Ser. No. 337,986
Int. Cl. B21d *5/02*
U.S. Cl. 72—383 **6 Claims**



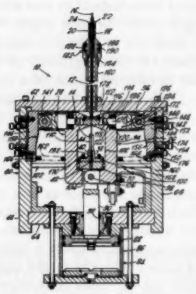
An assemblage for forming and straightening elongated articles in which the primary forming and straightening force is exerted through an elongated articulated member defining a relatively elongated segment engageable with a portion of the elongated article, such segment extending axially of the elongated article engaged thereby and being selectively generative from a linear configuration and through various arcuate configurations from one having an infinite radius to one forming a tangent arc at the apex of engagement thereof with the elongated article.

3,828,603

RIVETING APPARATUS

David John Sheffield, St. Albans; Paul Edward Prosser, Hemel Hempstead, and Bernard William Charman, Weybridge, all of England, assignors to Aerpat A.G., Zug, Switzerland

Filed May 26, 1972, Ser. No. 257,200
Int. Cl. B21j *15/18*
U.S. Cl. 72—391 **32 Claims**



Riveting apparatus which, when actuated, automatically performs a cycle of operations including supplying a tubular rivet to a setting station and setting the rivet, is of the kind comprising an elongate mandrel having an enlarged head at its forward end, and pulling jaws for holding and pulling the mandrel rearwardly to draw the enlarged head through the rivet

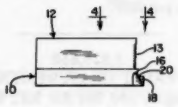
bore and set the rivet. Rivets are fed forwardly along the mandrel from the rear end and the pulling jaws are mounted for opening and closing movement to allow rivets to pass. The pulling jaws are movable in the lengthwise direction of the mandrel in both their open and closed condition and serve to pull the mandrel rearwardly to set a rivet, to return the mandrel forwardly and to advance rivets along the mandrel to the setting station. An air jet advances rivets forwardly past the pulling jaws and a detent holds the mandrel when the pulling jaws are open. The apparatus is operated pneumatically under the control of a logic circuit.

3,828,604

METHOD AND APPARATUS FOR FORMING TIPS OF SCREWS

Orville Allen Shelton, Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 8, 1973, Ser. No. 368,409
Int. Cl. B21h *3/06*
U.S. Cl. 72—469 **6 Claims**



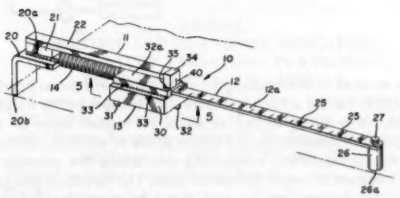
The invention is directed to a method of forming a tip on a fastener through the use of thread rolling dies in which the tip portion of the blank is first deformed at a point axially above the extremity to start the metal flowing or to achieve a state of plasticity followed by swaging the tip portion upwardly and inwardly to achieve the desired point configuration.

3,828,605

SURFACE FRICTION ANALYZER

Charles Fazekas, Charlotte, N.C., assignor to Elias Productions Incorporated, Akron, Ohio

Filed Apr. 6, 1973, Ser. No. 348,491
Int. Cl. G01n *19/02*
U.S. Cl. 73—9 **5 Claims**



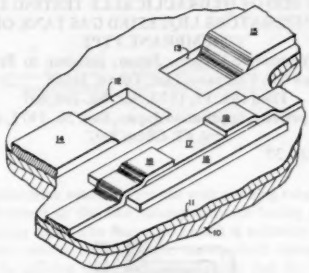
A device and a method of utilizing the device to obtain frictional uniformity on selected surfaces, such as a bowling lane, with the apparatus including a lightweight frame member having a spring-urged carriage movable across a scale indicia to measure the friction in the particular localized area being tested, with the carriage member having friction means in the form of a rubber glider provided thereon for engagement with the floor surface. The device contemplates establishing uniformity in bowling lane conditions, for example, by establishing a master friction standard so that testing of an individual lane will reveal the presence of either too much or too little friction, thus permitting the lane to be treated to comply with the preferred standard.

3,828,606

METHOD FOR DETERMINING THERMAL FATIGUE OF ELECTRONIC COMPONENTS

Allan Roy Wolter, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 6, 1972, Ser. No. 312,482
Int. Cl. G01n *25/00*
U.S. Cl. 73—15 R **15 Claims**



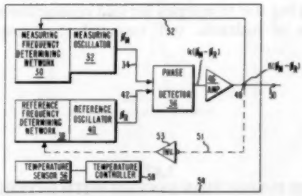
A method for determining thermal fatigue of electronic circuits and parts therefor includes the use of a thin-film thermal strain gage made from metals including metal alloys which are deposited on a preselected substrate by vacuum evaporation, sputtering, co-evaporation or similar techniques. The substrate material is selected in relation to the resistor gage material in such a manner as to create a predetermined mismatch of thermal expansion coefficient. The resistivity of the gage is responsive to a spectrum of temperature changes and reveals the progress toward ultimate failure of the circuit. The gage may take the form of a narrow strip-like assembly which is arranged immediately adjacent to an electronic device, component or other parts subject to failure due to thermal fatigue.

3,828,607

PHASE LOCK DETECTION AND CONTROL FOR PIEZOELECTRIC FLUID ANALYZERS

Dennis W. Janzen, and Curtis G. Dell, both of Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 24, 1973, Ser. No. 326,239
Int. Cl. G01n *31/06*
U.S. Cl. 73—23 **5 Claims**



Phase lock detector for an analyzer employing piezoelectric elements in electrical circuits. In general the piezoelectric elements differentially absorb a particular constituent in an analyzed fluid. This weight change of the crystal induces a change in the oscillator circuit containing this piezoelectric element. A phase detector detects the resultant phase change between the electrical circuits containing the piezoelectric elements, and provides a measurement of the amount of the

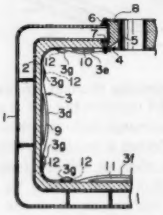
particular substance sorbed and, thus, within the fluid. The phase detector output also feeds back to one or more of the electrical circuits and forces them to oscillate at the same frequency.

3,828,608

METHOD OF HYDRAULICALLY TESTING LOW TEMPERATURE LIQUEFIED GAS TANK OF A MEMBRANE TYPE

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

Filed Oct. 17, 1972, Ser. No. 298,407
Claims priority, application Japan, Dec. 20, 1971, 47-83791
Int. Cl. G01m *3/02*
U.S. Cl. 73—37 **3 Claims**



A method of hydraulically testing low temperature liquefied gas tanks of a membranc type, said tank comprising a rigid outer vessel, a heat insulating intermediate layer and an inner membranous vessel, wherein said inner membranous vessel is of an angular shape including substantially flat portions and curved edge and corner portions and is adapted to be smoothly supported by the inside surface of the heat insulating intermediate layer under contraction due to low temperature as well as expansion by internal pressure when the inner vessel is loaded with low temperature liquefied gases, though the inner vessel is formed as over-sized at atmospheric temperature than a space defined by the inside surface of the heat insulating layer in consideration of said contraction, the method being characterized by positively supporting said flat portions of the inner vessel in an expanded condition when the inner vessel is filled with water at atmospheric temperature so that no wrinkling due to margins for said contraction is formed at the time of hydraulic test executed at atmospheric temperaure.

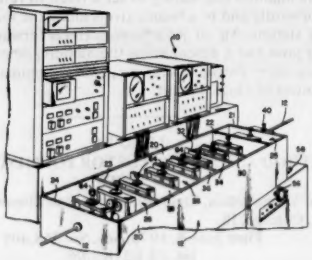
3,828,609

TUBE INSPECTION SYSTEM WITH INTERLACED SCANNING

Leon D. Furon, Woodland Hills; John A. Robinson, Chatsworth, both of Calif., and Jack E. Menick, Wilmington, N.C., assignors to Automation Industries, Inc., Los Angeles, Calif., by said Furon and Robinson

Filed Sept. 5, 1972, Ser. No. 286,150
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **3 Claims**

An ultrasonic nondestructive testing system is disclosed herein for inspecting elongated workpieces such as tubing at high rates of speed by means of an interlaced scanning system. The interlaced scanning system insures the entire volume of the workpiece being scanned at a variety of different angles



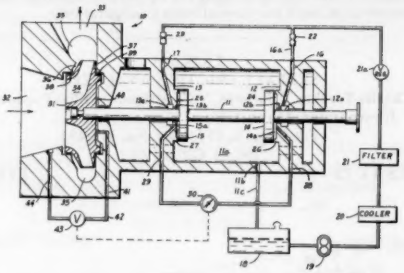
and in a plurality of different overlapping and interlaced scan patterns whereby a high speed inspection of the entire volume of the workpiece is possible.

3,828,610

THRUST MEASUREMENT

Judson S. Swearingen, 500 Bel Air Rd., Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 1,130, Jan. 7, 1970, abandoned. This application Dec. 22, 1971, Ser. No. 210,705
Int. Cl. G01l *5/12*
U.S. Cl. 73—140 **10 Claims**



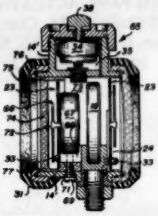
A method of determining the axial thrust on a thrust bearing assembly having a fixed and a rotating component in which a lubricant is being forced between the mated faces of the respective components and where zones of pressure are built up during operation, comprising monitoring the pressure of the lubricant between the mated faces. The invention also provides for determining the axial thrust by measuring the pressure differential of the lubricant between the mated faces or as it enters therebetween and as it emerges from between said faces. To measure the axial thrust on a pair of opposing thrust bearing assemblies, the pressure differential of the lubricant between the respective mated faces of the two assemblies is obtained. The axial thrust measurement can be utilized in a method of adjusting the axial thrust on the bearing assemblies by changing manually or automatically a balancing means separate from the thrust bearings and their lubricant and used to adjust the net thrust on the bearings in response to the respective pressure measurement. The invention also encompasses the combination of suitable pressure measuring devices with thrust bearing assemblies with and without balancing means to carry out the above measurement and control methods.

3,828,611

PORTABLE UNDERWATER INDICATING INSTRUMENT FOR DIVERS

Ralph B. Shamlian, Belmont, and Ashley J. Hollingsworth, Atherton, both of Calif., assignors to Farallon Idustries, Inc., Belmont, Calif.

Filed Nov. 10, 1972, Ser. No. 305,232
Int. Cl. G01f 23/14
U.S. Cl. 73—300 8 Claims



A portable underwater indicating instrument includes means for measuring a quantity of interest, such as time, pressure, temperature, magnetic field direction, or the like, and indicating means for indicating to the diver the measured quantity. The indicating means includes a dial having a face portion for viewing by the diver through a transparent window of a fluid tight housing. The dial face includes a fluorescent background with contrasting indicia of the measured quantity thereon. A light is provided in the housing for illuminating the fluorescent background portion of the dial. A manually operated switch controls energization of the light. The fluorescent background improves the visibility of the dial and also allows the lighted fluorescent dial to serve as an emergency light source. In a preferred embodiment, a pair of back-to-back pressure gauges are included within a common housing, one of the pressure gauges measures the diving depth and the second gauge measures the air pressure in the diver's scuba tank as communicated to the gauge over a flexible hose.

3,828,612

METHOD AND MEANS FOR INDICATING TEMPERATURE VARIATIONS IN A PRODUCT, PREFERABLY A FOOD PRODUCT

Karl Gunnar Eriksson, Rankhus Kyrkbyn, Kungsangen; Sven Erik Wahlgren, Dressyrvagen 15, Jakobsberg, and Carl Arnold Mangen, Rosenborgsgatan 27, Karlstad, all of Sweden

Filed Apr. 24, 1972, Ser. No. 246,578
Claims priority, application Sweden, Apr. 22, 1971, 5271/71
Int. Cl. G01k 11/06, 11/12
U.S. Cl. 73—356 12 Claims

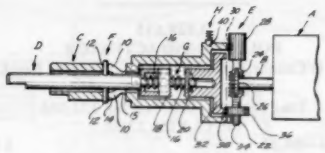
A method for indicating whether a product such as foodstuffs, biological preparations or the like have been subjected to conditions that would have resulted in a substantial deterioration or at least in a defective in quality of the product by means of an indicating system resulting in a permanent visible indication after a predetermined temperature level has been attained. Said indicating system comprising at least one component which is solid at the intended storage temperature and a dissolving agent for said solid component, whereby said component is partially or completely dissolved in said solvent when the system during a predetermined period of time has been subjected to a temperature exceeding the storage temperature, thereby resulting in a non-reversible visable indication.

3,828,613

TUNER DRIVE ASSEMBLY WITH RESETTING FINE TUNING SHAFT

Alfred Sfreddo, Stafford Springs, Conn., assignor to General Instrument Corporation, Newark, N.J.

Filed Apr. 2, 1973, Ser. No. 346,864
Int. Cl. F16h 35/18; H03j 1/14
U.S. Cl. 74—10.41 10 Claims



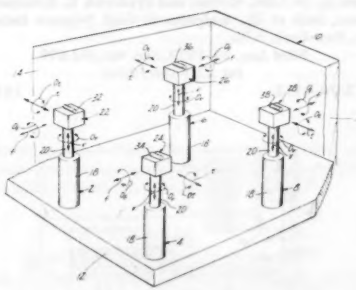
A tuner drive assembly for use with a tuning mechanism in a T.V. receiver or the like having a coarse tuning shaft and a fine tuning shaft. The fine tuning shaft is rotatably and axially movable relative to the coarse tuning shaft. Means are provided for driving the tuning mechanism and for operatively connecting the drive means to the fine tuning shaft and the coarse tuning shaft so that the tuning mechanism is activated in accordance with the rotation of the coarse tuning shaft and the rotation of the fine tuning shaft. The fine tuning shaft is axially movable between a first position wherein the fine tuning shaft is operably connected to the drive means and a second position wherein the fine tuning shaft is operably disconnected from the drive means. Additionally, means are provided for releasably retaining the fine tuning shaft in a fixed relative position with respect to the coarse tuning shaft such that relative rotation between the shafts is prevented. Further, the assembly contains means for returning the fine tuning shaft to the fixed relative position as the fine tuning shaft is moved from the first position.

3,828,614

VEHICLE TEST FIXTURE

Henry A. Borg, 444 Morton St., Romeo, Mich. 48065

Division of Ser. No. 312,418, Dec. 5, 1972. This application July 12, 1973, Ser. No. 378,487
Int. Cl. F16m 11/12
U.S. Cl. 74—16 3 Claims



A test fixture for an all-wheel drive vehicle provides a vertical hydraulic ram for each wheel position. Universal joint type connecting means are used to secure the vehicle atop the rams in the same way that the vehicle is secured to the wheels. Each connecting means, with its ram, permits 6° of movement to the wheel spindle to allow the spindle to move in accordance with the dictates of the wheel suspension geometry as the ram raises and lowers the wheel spindle to simulate irregularities in

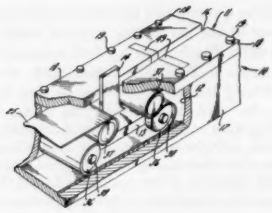
terrain. The fixture has input capabilities for fore-and-aft as well as transverse forces, and torque input to the wheel drives is provided for separate dynamometer loading of the wheel drives. The rear connection is shown provided with means to adjust the tapered roller bearings remotely, including a long-handle socket wrench which remains in place and is accessible after removal of the dynamometer connection, without disassembling the means by which the wheel spindle is mounted on the ram.

3,828,615

ROLLER BAND ACTUATOR

Chadwell O'Connor, 2024 Galaxy Dr., Newport Beach, Calif. 92660

Filed Feb. 15, 1973, Ser. No. 332,900
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.22 **6 Claims**



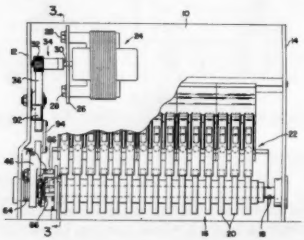
An actuator is disclosed employing back-to-back roller band clusters coupled to a trolley in a housing chamber with the trolley having an arm extending through a slot in the housing. The band closes the slot and also closes the chamber at the locations of the clusters on either side of the arm so that the introduction of expansible gas at one end of the chamber drives the trolley to the opposite chamber end. Preferably, the band is formed of steel ribbon and is held in place by magnets. The chamber is formed of a number of housing segments so that the chamber length can be widely varied. As a modification, a backup roller can be mounted on the trolley to help resist the gas pressures.

3,828,616

TRAFFIC SIGNAL CONTROLLER

Richard A. De Lille, Moline, and Frederick E. Erickson, Port Byron, both of Ill., assignors to Gulf Western Industries, Inc., New York, N.Y.

Filed Aug. 29, 1973, Ser. No. 392,679
Int. Cl. F16h *29/00*
U.S. Cl. 74—112 **18 Claims**



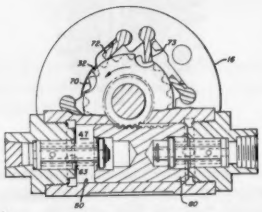
Structural arrangements are disclosed for achieving stepped advancement of a cam drum of a traffic signal controller. The arrangements include a ratchet and pawl assembly cooperable to step the drum in a given direction and a motor driven gear arrangement for achieving actuation of the ratchet assembly. The gear arrangement includes a motor driven pinion in meshing engagement with an oscillatable gear segment which is connected to the ratchet assembly by a pivotal link member. A slip clutch arrangement is provided between the pinion and motor drive shaft to provide for the shaft to rotate relative to the pinion when the gear segment is stopped during movement thereof in opposite directions about its axis.

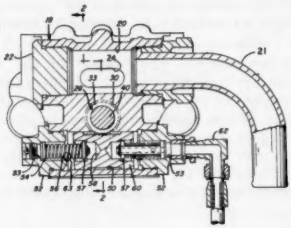
3,828,617

CAM PAWL ACTUATOR

Louis H. Le Blanc, 10 Glenwood Rd., Claremont, N.H. 03743

Filed Jan. 8, 1973, Ser. No. 321,795
Int. Cl. F16h *27/02*
U.S. Cl. 74—127 **10 Claims**





A rifle bar rotation mechanism for a pneumatic drill wherein remote control of rotation modes is accomplished by rotation of a cam element to control the engagement of pawl elements with a toothed ratchet member.

3,828,618

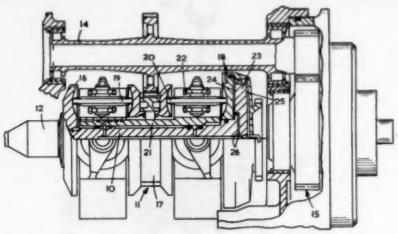
CONSTANT SPEED HYDRAULICALLY CONTROLLED TORIC TRANSMISSION WITH CONCENTRIC, TWO PISTON VALVE, GOVERNOR AND CONSTANT RATIO MEANS

Raymond Sharpe, Mirfield, and James Christopher Herbert Triffit, Baildon, both of England, assignors to Rotax Limited, Birmingham, England

Filed Aug. 2, 1972, Ser. No. 277,252
Claims priority, application Great Britain, July 27, 1971, 35381/71
Int. Cl. F16h *15/38*
U.S. Cl. 74—200 **5 Claims**

A variable-ratio frictional drive gear comprises two axially spaced torus discs between which there is a set of circumferentially spaced drive rollers in frictional rolling contact with toroidal surfaces on the discs. Each roller is rotatably mounted in a roller carriage which can tilt about an axis at right angles to the axis of rotation of the roller so as to vary the distances from the gear axis at which the roller engages respectively the two discs, thus varying the drive ratio of the gear. The variable-ratio frictional drive gear further includes a

first piston which is slidable in a second hollow piston under the influence of hydraulic fluid wherein axial movement of the first piston is arranged to effect tilting movement of at least one of the roller carriages. First means are provided to reduce the pressure, which, in use, is applied to the first piston by the hydraulic fluid, such reduction occurring when the first piston



reaches a predetermined axial position relative to the second piston. The latter is slidable in a cylinder under the influence of control fluid supplied by a governor and second means are provided which tend to maintain the ratio of the pressures of the hydraulic fluid supplied to the governor and the control fluid supplied by the governor at a constant or substantially constant value.

3,828,619

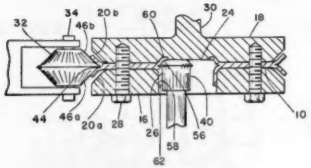
HUB OR BEARING HOUSING, PULLEY AND METHOD OF MAKING THE SAME

Charles C. Frost, Kentwood, and Siegfried K. Weis, Grand Rapids, both of Mich., assignors to C. L. Frost & Sons, Inc., Grand Rapids, Mich.

Division of Ser. No. 199,985, Nov. 18, 1971. This application Apr. 12, 1973, Ser. No. 350,342

Int. Cl. F16h *55/36;* **B21d** *53/26*

U.S. Cl. 74—230.01 **7 Claims**



This invention relates to a novel hub or bearing housing, pulley, and the like and to the method of fabricating such hub or bearing housings, grooved metal pulleys, and the like in which a hub flange forming the housing is formed from a one-piece metal disk utilizing metal-splitting techniques. The disk is provided with an inner opening in its central portion and is held between a pair of die members between the inner opening and its outer diameter thereby leaving the inner opening free so that the disk may be split and expanded toward the die. Flanges formed on the inner diameter of the die are shaped to receive and form a hub or bearing housing in the disk as the material is split and expanded toward the die. In another embodiment of the invention, a pulley groove and bearing housing are formed from a one-piece metal disk in a simultaneous splitting operation. Flanges on the inner and outer diameters of a pair of cooperating die members are shaped to receive and form a hub or bearing housing about the inner diameter while simultaneously receiving and forming the rim or pulley groove about the outer diameter of the disk.

3,828,620

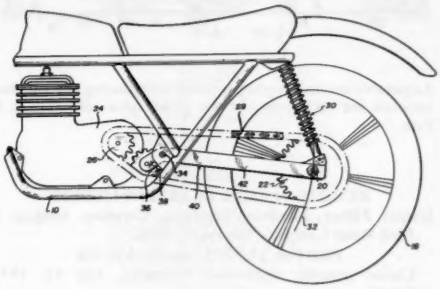
DRIVE SYSTEM

Hewart H. Heathwaite, and Robert H. Mead, both of Ithaca, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 284,691, Aug. 29, 1972. This application Nov. 15, 1973, Ser. No. 416,157

Int. Cl. F16h *7/10*

U.S. Cl. 74—242.15 B **2 Claims**



A power driven vehicle having a drive chain transmitting power from an engine to a driven wheel capable of moving between various positions and means for maintaining substantially constant final drive chain tension for all wheel positions.

3,828,621

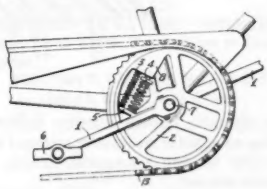
BICYCLE DRIVES

Kunio Uchino, 410-10 Oaza Miyake, Fukuoka, Japan

Filed May 14, 1973, Ser. No. 360,038

Int. Cl. F16h *55/30*

U.S. Cl. 74—243 PC **2 Claims**



A bicycle in which the pedals drive the sprocket wheel through intermediate spring means so as to provide drive from energy stored in the springs at dead center positions.

3,828,622

ELECTRONIC READOUT CONTROL

Frederick R. Neff, 2993 Curtis Ave., Des Plaines, Ill. 60018

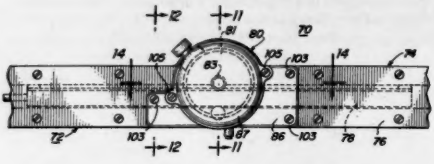
Continuation-in-part of Ser. No. 192,422, Oct. 26, 1971. This application Dec. 11, 1972, Ser. No. 314,112

Int. Cl. F16h *55/18*

U.S. Cl. 74—409 **9 Claims**

There is provided a numerical readout detector for a machine tool and the like having a movable machine element, the position of which is to be accurately determined. In accordance with the present invention the readout detector includes a rack gear movable in response to the position of the movable machine element and a pinion gear mating therewith.

A slight backlash pressure is maintained on the pinion gear to maintain engagement between the pinion gear and rack gear.



Adjustable means may be provided for reducing the backlash between the rack gear and the pinion gear substantially to zero.

3,828,623

REMOTE OUTSIDE REARVIEW MIRROR

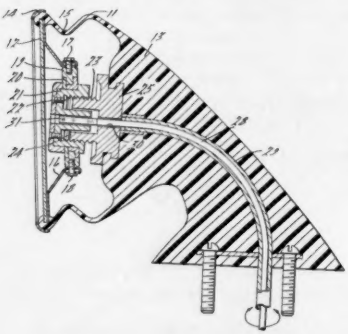
Gunter Zillner, Fliesteden/Bergheim, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 12, 1973, Ser. No. 331,924

Claims priority, application Germany, July 12, 1972, 2234191

Int. Cl. G05g 1/00

U.S. Cl. 74—491 **7 Claims**



A remote-adjustable outside rearview mirror for motor vehicles having an adjuster mechanism arranged in the mirror housing operable through a rotatable, flexible drive shaft, from the vehicle interior.

3,828,624

ACTUATOR ASSEMBLY

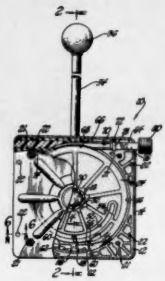
Hans Wiegand, Boyertown, Pa., assignor to Teleflex Incorporated, North Wales, Pa.

Filed Nov. 24, 1971, Ser. No. 201,731

Int. Cl. F16c 1/18

U.S. Cl. 74—501 R **22 Claims**

An actuator assembly of the type for moving a flexible transmitting core element in a curved path including a housing comprising a plastic half covered by a metal plate. The plastic half has a circular cavity for receiving a circular drive wheel which has a groove circumferentially thereabout for receiving the core element. The plastic half has a pocket and a plastic bushing is disposed in the pocket. A rod extends through the housing through the plastic bushing and through an arcuate slot in the circular drive wheel and into threaded engagement with the metal half of the housing whereby upon rotation of the rod the bushing is urged into frictional sliding engagement with the circular drive wheel for controlling the rotation thereof or to act as a brake. The housing also has a channel extending therethrough across the top and a core guide disposed in the channel. The channel has an enlarged portion adjacent each end and the guide includes a shoulder disposed in one of the enlarged portions. An insert is disposed at the other end of the channel and has a shoulder at the end thereof which is in abutting engagement with the other end of the guide, the insert and guide having passages therethrough through which a core element extends to engage the peripheral groove in the circular drive member.



3,828,625

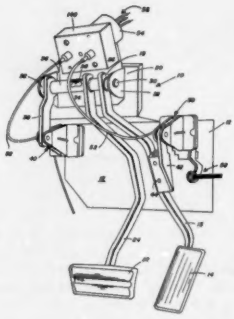
ADJUSTABLE LINKAGE

Max R. Bruhn, Jr., Spring Lake, Mich., assignor to Grand Haven Stamped Products Company, Grand Haven, Mich.

Division of Ser. No. 200,357, Nov. 19, 1971, Pat. No. 3,765,264. This application Apr. 23, 1973, Ser. No. 353,603

Int. Cl. G05g 1/14

U.S. Cl. 74—512 **3 Claims**



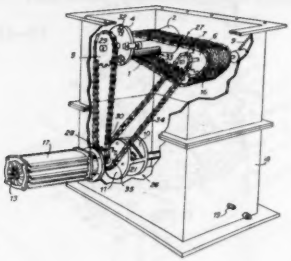
The present invention discloses an adjustable linkage mechanism adapted for use with foot-operated pedals, i.e., brake, accelerator and clutch, of a motor vehicle. The spacing between the seat of a motor vehicle and the pedals may be varied to suit the requirements of an individual operator through use of an actuator mechanism operatively connected between the pedal arm and the associated linkage mechanisms. Basically, the invention provides a powered means for automatically lengthening or shortening the associated linkage to pivot the pedal either toward or away from the seat to vary the spacing therebetween.

3,828,626

HAND OPERATED VARIABLE SPEED REDUCERS

Modesto Ochoa Scott, Mexico City, Mexico, assignor to Humberto Viadas Enriquez, Calle, Mexico

Filed Dec. 17, 1971, Ser. No. 209,306
Claims priority, application Mexico, Dec. 18, 1970, 124231
Int. Cl. F16h *37/00, 1/38*
U.S. Cl. 74—689 10 Claims



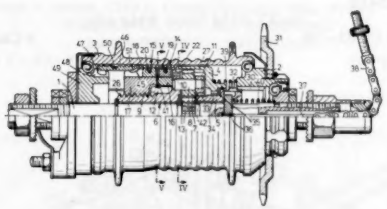
A hand operated reducer or speed changer for use in connection with transmission gears which comprises motor and driving axles on one single line, lodged in a housing and jointed by a ball-bearing, which allows the axle to rotate in an inverted movement in order to transmit variable speed to a differential gear in relation to the steady speed derived from a driving source.

3,828,627

MULTIPLE-SPEED HUB

Hans-Joachim Schwerdhofer, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Nov. 28, 1972, Ser. No. 310,138
Claims priority, application Germany, Dec. 2, 1971, 2159770
Int. Cl. F16h *3/44*
U.S. Cl. 74—750 B 10 Claims



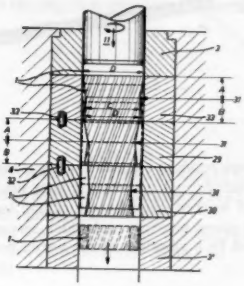
A three-speed hub for a bicycle or like vehicle has a driver and a hub shell coaxially rotatable on a stationary shaft, planetary gearing, and a coupling sleeve manually shifted for coupling the driver to the ring gear or the planet carrier of the gearing. One of two pawl-and-ratchet clutches is normally coupled to the ring gear to transmit torque to the hub shell but is released when cooperating abutments on the coupling sleeve and the ring gear axially retract the ring gear whereupon torque is transmitted from the planet carrier to the hub by the second clutch. The pawl carrier of the latter may simultaneously carry the brake cone of a coaster brake. Three transmission ratios are available.

3,828,628

METHODS OF EXTRUDING HELICAL GEAR BLANKS

Yves Roger, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Division of Ser. No. 199,987, Nov. 18, 1971. This application July 12, 1973, Ser. No. 378,501
Claims priority, application France, Nov. 24, 1970, 70.42073; Nov. 3, 1971, 71.39420
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 R 4 Claims



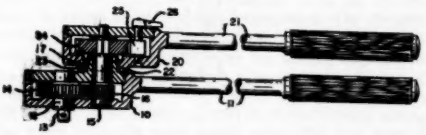
Method of manufacturing helical gear blanks by cold extrusion, characterized in that it comprises the steps of passing successive billets through a die formed with internal helical teeth in order to impress these internal helical teeth by extrusion in the billet for forming external helical teeth in the cylindrical surface of said billets, said billets being driven through said die by a punch adapted to rotate freely.

3,828,629

MULTI-POWER RATCHET WRENCHES

Gerald Moore, Turtle Creek, Pa., assignor to Eugene F. Buell, a part interest

Filed May 9, 1973, Ser. No. 358,655
Int. Cl. B25b *17/00, 13/46*
U.S. Cl. 81—57.3 5 Claims



A multiple powered ratchet wrench and handle are provided having a main housing and handle, a driven shaft in said housing for rotation, an external drive member on said shaft, a first pinion on said shaft within the housing, a second drive shaft in said housing parallel to said first shaft and carrying a second pinion engaging said first pinion, said first and second pinion being arranged to provide a desired multiplication of power from the second shaft to the first shaft, a second drive pinion on said second shaft, a second handle journaled for rotation about said second shaft and ratchet drive means on said second handle engaging said second driven pinion to rotate said second shaft.

3,828,630
SOUND DEADENING MEANS FOR USE ON A BAR FEEDING AND BAR WORKING MACHINE

William Argereu, Hickory Dr., North Scituate, R.I. 02857

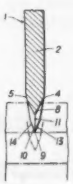
Division of Ser. No. 159,672, July 6, 1971. This application Jan. 9, 1973, Ser. No. 322,140
Int. Cl. B23b *13/00*
U.S. Cl. 82—2.5 8 Claims

One or more resilient discs having an opening in the center to receive therethrough an elongated bar stock which is to be fed into and worked upon by a machine tool such, for instance, as a screw machine and which serves to deaden the sound caused by a vibration of the bar in being fed into the machine.

3,828,631
CUTTING DIE AND PROCESS

Ernst Maximilian Spengler, Heusenstamm, and Rolf Karl Stursberg, Haan, both of Germany, assignors to Martin Miller Gesellschaft m.b.H., Vienna, Austria

Division of Ser. No. 216,464, Jan. 10, 1972. This application Jan. 10, 1973, Ser. No. 322,458
Claims priority, application Germany, Jan. 14, 1971, 2101543; Jan. 14, 1971, 7101204
Int. Cl. B26d *1/04*
U.S. Cl. 83—20 1 Claim

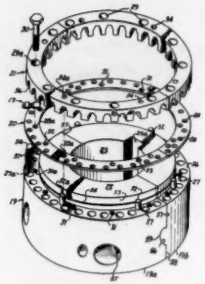


The cutting die is made from strip steel and comprises a die blade having a cutting edge formed with sawteeth and chamfered surfaces extending along said cutting edge on opposite sides of said blade. To cut through a material which comprises a fabric having first filament portions extending in a predetermined direction and second filament portions extending transversely to said predetermined direction, said material is cut into at a plurality of discrete points which are spaced apart on an intended line of cut extending in said predetermined direction and said first filament portions which are disposed adjacent to said line of cut are pushed laterally away from said line of cut. At the same time, the cutting into said material is continued along said line of cut until said second filament portions extending across said line of cut have been severed.

3,828,632
ROTARY PUNCH

James V. Grano, Temple City, Calif., assignor to Tools and Production, Inc., Temple City, Calif.

Filed Oct. 24, 1972, Ser. No. 300,100
Int. Cl. B23d *25/12*
U.S. Cl. 83—345 11 Claims

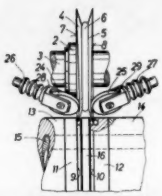


There is disclosed a rotary punch for punching a series of holes through paper or cardboard or the like, comprising a pair of counter-rotating rolls one of which has punch elements protruding from the periphery to mate with corresponding die holes at the periphery of the other roll. Each of the punch elements, which may be removed and replaced without disassembling the punch, comprises a cylinder with a punch head at one end, held in place by a pair of converging walls against which the cylinder is held by a spring-loaded ball pressing against a recess in the cylinder. The die holes are serrated and are of harder material than the punch, which initially is unserrated and of slightly larger diameter than the internal diameter of the die serrations so that the punch head becomes correspondingly serrated upon a punching operation.

3,828,633
METHOD AND APPARATUS FOR SLITTING MATERIALS SUCH AS ALUMINUM OR THE LIKE

Heinrich Klingen, Dusseldorf, Germany, assignor to Jagenberg-Werke AG, Dusseldorf, Germany

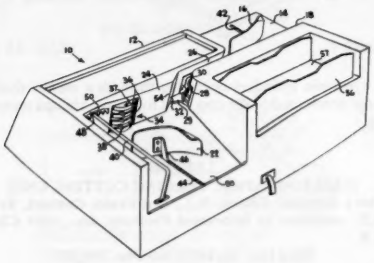
Filed June 15, 1973, Ser. No. 370,510
Claims priority, application Germany, July 7, 1972, 2233433
Int. Cl. B23d *19/04*; B26d *3/00*
U.S. Cl. 83—56 6 Claims



In the slitting of a web of material such as aluminum by passage of the web over at least one pair of symmetrically-arranged circular knives and respective counterknives to excise a narrow waste strip from two between newly formed subwebs, the improvement which comprises temporarily and elastically deforming said circular knives over a portion of their peripheries downstream of their points of cut whereby said knives at such portions will be prevented from contacting

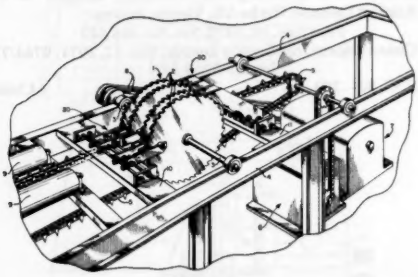
the edges of said sub-webs. To this end, in an apparatus as described a pair of rotatable wheels are resiliently urged against said circular knives just downstream of the points where the knives disengage the counterknives.

3,828,634
AUTOMATIC ENVELOPE OPENER
Harry E. Luperti, Wilton, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed June 25, 1973, Ser. No. 373,518
Int. Cl. B26d *1/28*
U.S. Cl. 83—94 **12 Claims**



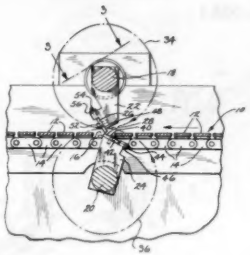
An automatic envelope opener is described wherein a housing having an envelope infeed platform and envelope outfeed platform enables envelopes to be automatically opened. The envelopes are retained on edge in a generally vertical orientation on the platforms and moved one at a time from the infeed platform along a travel path, where a cutter is located, to the outfeed platform for stacking. The envelopes have a small edge segment severed by a cutter horizontally operative in the travel path and are automatically stacked against a movable retainer at the outfeed platform with a stacker and a diverter wall placed in the travel path to deflect envelopes towards the retainer. An envelope jogger is mounted on the housing to urge envelope contents to one edge and enable envelope opening without damage to the contents.

3,828,635
SAWMILL WITH ADJUSTABLE GUIDES AND SPREADERS
Lawson A. Smith, 1550 E. Canal, Picayune, Miss. 39466
Filed May 23, 1973, Ser. No. 363,003
Int. Cl. B27b *5/34;* **B27g** *19/08*
U.S. Cl. 83—102.1 **10 Claims**



A sawmill including a multiple number of rotating circular sawblades wherein the guides maintaining the sawblades in their proper position and the spreaders adjacent the exit side of the sawblades are mounted by means which are easily adjustable and allow for easy removal and insertion of the guides and spreaders. The guides and spreaders are each mounted on two horizontally disposed, threaded bars having appropriately positioned and spaced nuts thereon. The mounting portion of the guides and spreaders include two slots, a curved one in the bottom edge and a straight one in the end edge on the end away from the sawblades, the slots mating with the horizontally disposed rods when the guides and spreaders are mounted thereon. Positioning nuts are included on the threaded rods for locking the guides and spreaders onto the rods and for allowing easy and precise lateral and angular adjustments thereof. Restraining rings are included about the terminal portions of the curved slots in the spreaders which cooperate with the nuts to further lock the spreaders onto the rods.

3,828,636
ROTARY CUTTING APPARATUS
Richard W. Smith, Racine, Wis., assignor to Pratt Manufacturing Corp., Milwaukee, Wis.
Filed Mar. 21, 1973, Ser. No. 343,582
Int. Cl. B23d *25/12;* **B26d** *1/12*
U.S. Cl. 83—341 **8 Claims**

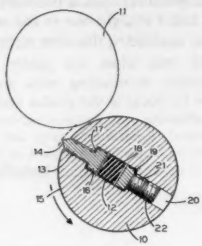


Two elongated knives are synchronously rotated into and out of cutting engagement with each other about separate axes of rotation. A linearly-moving web of material is moved between the two knives and is positioned to be cut thereby when the knives meet in cutting engagement. The distance between the cutting edge of one knife and its axis of rotation is greater than the distance between the cutting edge of the other knife and its axis of rotation, whereby the cutting edges travel at different lineal speeds. The cutting edges are skewed with respect to one another so that the faster moving cutting edge wipes across the other cutting edge when they meet in cutting engagement. The cutting edges meet at a contact point which moves along the length of the two cutting edges as the faster moving cutting edge wipes across the slower. This produces a shear cutting action.

3,828,637
WEB CUTTER
William Frederick Slack, Andover, N.J., assignor to Van Dyk Research Corporation, Whippany, N.J.
Filed Feb. 7, 1972, Ser. No. 224,170
Int. Cl. B23d *25/12;* **B26d** *7/06*
U.S. Cl. 83—348 **4 Claims**

A paper cutter in the form of a knife mounted in a slot of a first roller closely spaced and parallel to a second roller. The knife protrudes from the first roller and engages the second

roller when the first roller is rotated, the paper to be cut being fed between the rollers. An elastomeric material is pressed



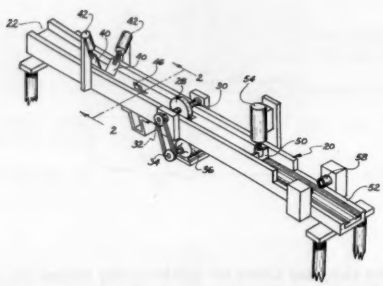
against the back edge of the knife to prestress the knife blade so that the force on the blade remains essentially constant during the cutting process.

3,828,638

METHOD AND APPARATUS FOR PRODUCING WINDSHIELD WIPER BLADES

John L. V. Bonney, Jr., Columbus, Ohio, assignor to Perma-Blade, Inc., Columbus, Ohio

Filed Aug. 2, 1972, Ser. No. 277,387
Int. Cl. B26d *9/00*
U.S. Cl. 83—356.1 **1 Claim**



A method and apparatus for continuously producing wiper blades from a continuous strip of moving flexible material such that the blades are provided with longitudinally extending cavities as well as side orifices which communicate with the cavity and adapt the blade to expel washing fluid to the blade edge along the entire longitudinal extent of the blade.

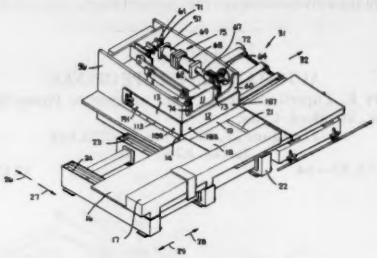
3,828,639

SHEAR MOUNTING FOR CORNER SHEARING MACHINE

Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.

Filed Aug. 14, 1972, Ser. No. 280,248
Int. Cl. B26d *5/42*
U.S. Cl. 83—390 **33 Claims**

A corner shearing machine has two pairs of shears, the lower blade of one pair intersecting the lower blade of another at a right angle, and the upper blade of one pair intersecting the upper blade of the other pair at a right angle, the lower blades being mounted to a base and the upper blades to a reciprocable ram. Adjusting wedge assemblies, with screw drives and manually operable cranks facilitate adjustment of blade clearance, and hydraulically energized pressure pads maintain zero clearance between ram guide slides and guideway blocks therefor. Ram drive is by one or another of



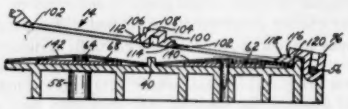
two hydraulic cylinders operating through a rocker shaft and linkage connected to the ram, and hydraulic clamps secure the work.

3,828,640

CARDIOGRAPHIC TRACING CUTTING UNIT

Herbert Gottleib, Edison, N.J., and Frank Guthart, Syosset, N.Y., assignors to Instrumed Products, Inc., Port Chester, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,507
Int. Cl. B26d *7/02*
U.S. Cl. 83—464 **8 Claims**



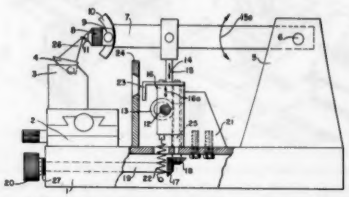
An improved cardiographic tracing cutting unit for trimming and preserving the pertinent portions of the trace. The unit has a plastic base upon one side of which are mounted three different size dies. A transparent plastic cover plate is pivotally hinged to a side edge of the base and has windows defined therein, overlaying the dies, the edges of the windows being the same configuration but of somewhat larger dimensions than the dies to act as a cut-out guide for any blunt edge bearing against the dies.

3,828,641

APPARATUS FOR ADJUSTING THE ELEVATION OF A SPECIMEN IN MICROTOMES, PARTICULARLY ULTRAMICROTOMES

Hellmuth Sitte, Humburg/Saar, Germany, assignor to C. Reichert Optische Werke AG, Vienna, Austria

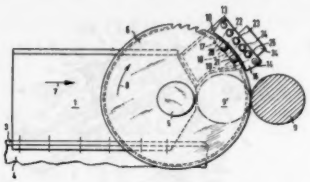
Filed Nov. 10, 1972, Ser. No. 305,627
Claims priority, application Austria, Nov. 12, 1971, 9764/71
Int. Cl. B26d *7/06*
U.S. Cl. 83—703 **1 Claim**



Adjustment of the specimen holder arm with respect to the knife in microtomes and ultramicrotomes is desirable to com-

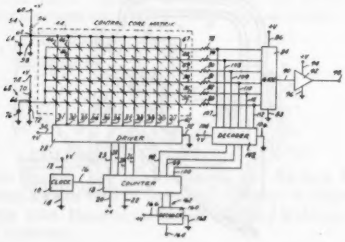
pensate for eccentrically located specimens in the plastic bedding. Moving the specimen holder arm eccentrically is accomplished by manual movement of the driving means which isolates the specimen holder arm. Preferably, the movement is accomplished through mechanical linkage providing precision control under the movement.

3,828,642
CIRCULAR SAW
Roderich Orendi, Reutlingen-Sondelfingen, Germany, assignor to Gustav Wagner Machinenfabrik, Reutlingen, Germany
Filed Feb. 26, 1973, Ser. No. 335,898
Claims priority, application Germany, Mar. 1, 1972, 2209711
Int. Cl. B23d 47/02
U.S. Cl. 83—823 7 Claims



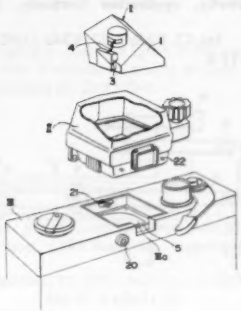
The present circular saw includes rollers for guiding the saw blade, preferably at its periphery when it enters into a workpiece. The guide rollers are attached to a pair of roller carrier members so that a gap is formed between opposing guide rollers through which the saw blade passes. The roller carrier members are spring biased relative to a support and toward the saw blade. Preferably the biasing is such that the saw blade is bend outwardly slightly away from a saw housing.

3,828,643
SCANNER FOR ELECTRONIC MUSICAL INSTRUMENT
Eugene S. Morez, Bensenville, Ill., assignor to Chicago Musical Instrument Co., Chicago, Ill.
Filed Feb. 20, 1973, Ser. No. 333,984
Int. Cl. G10f 5/00; G10h 1/00
U.S. Cl. 84—115 15 Claims



A scanner for an electronic musical instrument employs a matrix having two sets of current conducting lines forming intersecting rows and columns, with a plurality of magnetic cores arranged at the intersections of the matrix. Individual ones of both sets of lines are energized successively to individually scan the cores, and the lines of one set are connected to a gate which produces a train of output pulses on a single output line, in response to cores which are operative to magnetically couple the lines of one set to the lines of the other set. The cores are normally maintained in inoperative condition by exposing them to a saturating magnetic field. The cores are each selectively rendered operative by moving the magnetic field, relative to the core enabling the core to effect a magnetic coupling between intersecting lines of the two sets by operation of a key of the keyboard of the instrument, or by operation of an actuating member of a switch for selecting a control function for the instrument.

3,828,644
DETACHABLE VIEWFINDER ARRANGEMENT FOR USE IN A PHOTOGRAPHIC CAMERA
Isamu Uchida, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan
Filed Dec. 13, 1972, Ser. No. 314,551
Claims priority, application Japan, Dec. 20, 1971, 46-121021
Int. Cl. G03b 13/02
U.S. Cl. 88—54 7 Claims

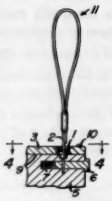


A detachable viewfinder arrangement for use in a photographic camera of the type designed to accommodate such detachable viewfinder, which essentially comprises a main prism of pentagonal shape having a pair of oppositely sloping surfaces and a small prism composed of a pair of upper and lower portions bonded to each other, the boundary therebetween being formed with a semitransparent mirror surface which extends in the same plane as that of one of the sloping surfaces of the main prism and substantially forms a partial extension of the one of the sloping surfaces of the main prism. This arrangement is effective to project at least one indicating mark disposed above the upper surface of the upper portion of the small prism into the field of view of the finder.

3,828,645
SAFETY WIRE INTERRUPTER ASSEMBLY
Joseph E. Testerman, and Louis A. Robertson, both of Edgewood, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation of Ser. No. 111,896, Feb. 2, 1971, abandoned.
This application Jan. 9, 1973, Ser. No. 322,259
Int. Cl. B64d 1/04
U.S. Cl. 89—1.5 D 2 Claims

An improved safety wire interrupter and method of arming munitions wherein a plastic member, such as high or low den-

sity polyethylene, is fused onto the safety wire to prevent withdrawal of the safety wire from a safety pin until tension is



applied to a lanyard means fixedly connected to the safety wire.

3,828,646

APPARATUS FOR APPLYING SOLID LUBRICANT TO THE MATERIAL WORKING FACE OF A TOOL

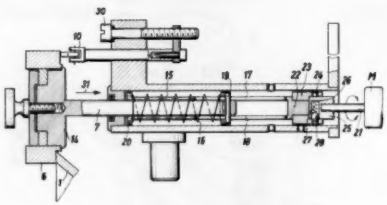
Dietrich Borse, Norderstedt; Albert Lockemann, Hamburg, and Gerd Cordsen, Heinstedt-Ulzburg, all of Germany, assignors to Ernst Winter & Sohn, Hamburg, Germany

Filed Aug. 8, 1972, Ser. No. 278,882

Claims priority, application Germany, Aug. 9, 1971, 2139829

Int. Cl. B23b *9/00;* **B24b** *55/02*

U.S. Cl. 90—11 R **19 Claims**



A rotary tool has a material-removing face and is rotated at a first speed about a first axis. A body of solid lubricant is located axially adjacent the material-removal face and is rotated about the second axis at a slower second speed. An advancing arrangement advances the rotated body of solid lubricant longitudinally of the first axis against the material-removal face of the tool.

3,828,647

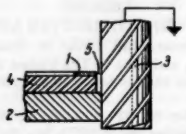
METHOD OF MILLING WORKPIECES

Jury Dmitrievich Vragov, prospekt Lenina, 26, kv. 51; Vladimir Egorovich Danyaev, ulitsa Pisareva, 10, kv. 1; Anatoly Petrovich Trubin, ulitsa Lyadova, 31b, kv. 1, and Sergei Gavrilovich Sinichkin, ulitsa Krasnoflotskaya 8, kv. 3, all of Gorky, U.S.S.R.

Filed Sept. 27, 1972, Ser. No. 292,836

Int. Cl. B23q *33/00*

U.S. Cl. 90—11 C **3 Claims**



A pattern made from a conductive material is bound with a workpiece to be machined. The pattern is electrically insulated from the latter and placed on the table of a machine-tool. The pattern and a cutter disposed in proximity thereto are so connected to a machine control circuit that an electric discharge is produced therebetween. Parameters of the electric discharge determined by the value of a clearance between the cutter and the pattern are used as control signals for the control system of the machine. The control system provides the travel of the cutter along the pattern contour. At the same time the workpiece is machined by the cutter according to a predetermined outline.

3,828,648

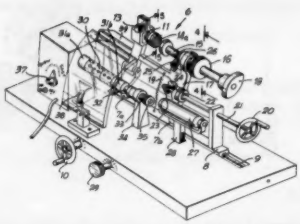
PLASTIC-LENS CUTTER

John H. Geula, 150 E. 69th St., New York, N.Y.

Filed Jan. 18, 1973, Ser. No. 324,752

Int. Cl. B23b *1/18;* **B24b** *7/00*

U.S. Cl. 90—13.3 **19 Claims**



A plastic lens cutting device having a rotatable cutter, lens support structure, means to rotate a lens about an axis parallel to the axis of the cutter and a pattern and follower to control the shape of the lens being cut.

3,828,649

MILLING HEADS

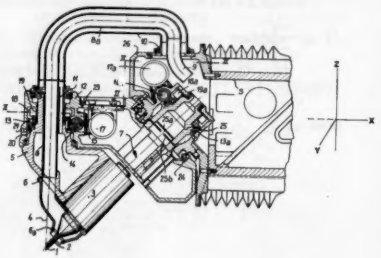
Pierre Lecailtel, and Bruno Dressler, both of Billancourt (Hauts de Seine), France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Oct. 26, 1972, Ser. No. 300,965

Claims priority, application France, Oct. 26, 1971, 71.38489

Int. Cl. B23c *1/12*

U.S. Cl. 90—15 **6 Claims**



This milling head intended for machining complex evolutive surfaces in easily machinable materials for manufacturing mock-ups and patterns comprises a tool holder spindle having its axis adapted to pivot about a first axis inclined to the spindle axis and converging therewith to the tool point, said spindle pivot axis pivoting in turn about the second pivot axis while forming therewith the same angle as with the spindle

axis, said first and second pivot axes being also coincident at a point corresponding to the tool point, said second axis being rigid with the frame structure supporting the milling head and being subjected to three movements along the conventional reference axes X, Y and Z of the machine. Thus, the tool holder spindle can swivel in all directions about the tool point.

3,828,650

MULTISPEED HYDRAULIC OR PNEUMATIC DEVICE

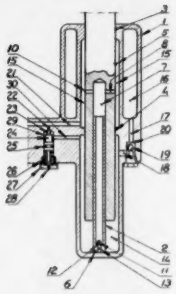
Anders Ivar Bryntse, Mjolby, and Karl Erik Berkestad, Linkoping, both of Sweden, assignors to AB Bygg-och Transportekonomi (BT), Mjolby, Sweden

Filed Mar. 16, 1973, Ser. No. 342,216

Claims priority, application Sweden, Mar. 24, 1972, 3859/72

Int. Cl. F15b *11/16*

U.S. Cl. 91—411 A **7 Claims**



A hydraulic or pneumatic device is provided with a cylinder and piston system for providing a rapid stroke and a power stroke. The piston part of said system comprises a piston-rod like plunger piston, which at its lower end slidingly surrounds a tube extending upwardly from, but not secured to the bottom of the cylinder. The cylinder is also provided with two working chambers, which at least partly peripherically surround said piston. Passages are formed in said piston and in said tube for connection of the two working chambers.

3,828,651

COLUMN OF ADJUSTABLE LENGTH

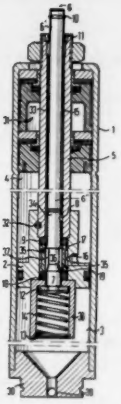
Nikolaus Dorner, Koblenz-Karthause, and Herbert Freitag, Koblenz-Lutzel, both of Germany, assignors to Stabilus Industrie Und Handelsgesellschaft GmbH, Koblenz-Neuendorf, Germany

Continuation of Ser. No. 777,768, Nov. 21, 1968, abandoned. This application Sept. 27, 1972, Ser. No. 292,814

Int. Cl. F15b *15/17*

U.S. Cl. 91—416 **13 Claims**

A column of adjustable length for use as a table leg or the like having a cylinder, a piston movable in the cylinder, a hollow piston rod attached to the piston and axially projecting from the cylinder, and an operating rod axially slidable in the piston rod with ample clearance for operating a first valve which connects the two cylinder compartments on opposite axial sides of the piston is additionally equipped with a second valve which connects one of the compartments with the atmosphere through the clearance space in the piston rod when the operating rod is displaced axially beyond the distance required for operating the first valve.



3,828,652

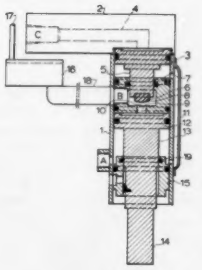
BACK-UP LOCKING CYLINDER

Donald J. Beneteau, 1333 Front St., Amherstburg, Ontario, Canada

Filed Dec. 15, 1972, Ser. No. 315,686

Int. Cl. F15b *11/08*

U.S. Cl. 91—445 **2 Claims**



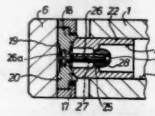
A compressed air or hydraulic fluid cylinder for attaching a back-up electrode in resistance welding operation containing two pistons with corresponding piston rods. Compressed air entering through a port in the cylinder holds the two pistons in the normal inactive position. When the pistons are activated, pressurized non compressible fluid acts upon the front piston and extends its piston rod until contact is made with the welding work. The pressure at the welding point is maintained by means of the rear piston which is activated by compressed air to lock the existing pressure against the front cylinder. For recycling the procedure is repeated.

3,828,653

SLIDE SHOE AND PISTON ARRANGEMENT

Ulrich Aldinger; Gunter Kersten, and Emil Knodel, all of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 10, 1972, Ser. No. 242,485
Claims priority, application Germany, Apr. 17, 1971, 2118712
Int. Cl. F01b 13/04
U.S. Cl. 91—488 4 Claims



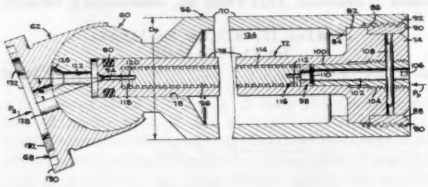
In a hydostatic rotary pump or motor having a cylinder block with cylinders, pistons are mounted which are provided with slide shoes engaging an eccentric annular actuating guide means so that the pistons are reciprocated. Each piston has a spherical end face in sliding contact with a spherical inner slide shoe face having the same radius and center. Mechanical connecting means mount the slide shoe on the piston for angular movement about the center.

3,828,654

PISTON FOR TORQUE TRANSMITTING APPARATUS OF THE SWASH PLATE TYPE

Roger H. Wiethoff, Wayzata, Minn., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 3, 1972, Ser. No. 277,540
Int. Cl. F01b 31/10; F16j 1/00; F04b 1/00
U.S. Cl. 91—488 6 Claims



A piston for a hydraulic swash plate motor or pump is provided with an internal helical capillary passage of extended length for conducting part of the operating fluid, directed against the head of the piston, at a controlled pressure and flow rate to the swash plate and to the bearing shoe between the ball end of the piston and the swash plate for lubrication purposes and for providing a hydraulic balance for the thrust load on the piston.

ERRATUM

For Class 91—497 see:
Patent No. 3,828,400

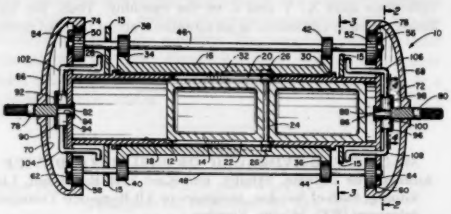
3,828,655

COAXIAL ENGINE

Bobby J. Williams, 21731 Canon Dr., Topanga, Calif. 90290

Filed Oct. 6, 1972, Ser. No. 295,518
Int. Cl. F01b 3/06, 7/02
U.S. Cl. 92—31 3 Claims

An engine which is composed of a piston reciprocally movable in a cylinder, the follower connected to the piston which communicates with a substantially sinusoidal groove in a sleeve, the sleeve surrounding a portion of the cylinder, a power take-off assembly coupled to the sleeve and effects transfer of the rotational movement of the sleeve to an output shaft, the longitudinal axis of the output shaft in alignment with the longitudinal axis of the cylinder and the longitudinal axis of the sleeve and the longitudinal axis of the piston.

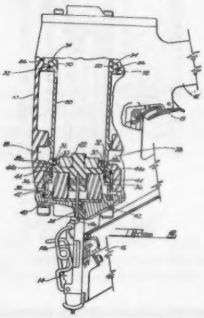


3,828,656

ANNULAR PISTON STOP STRUCTURE

Franklin Keith Biddle, and Carl T. Becht, both of Cincinnati, Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio

Filed Jan. 22, 1973, Ser. No. 325,263
Int. Cl. F01b 11/02
U.S. Cl. 92—85 4 Claims



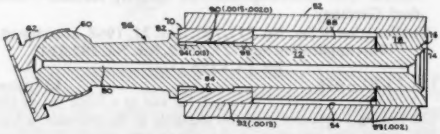
A structure for stopping a high energy piston, operating within a cylinder, in a short distance at the end of its stroke. There is provided an annulus of resilient material secured to said cylinder and extending slopingly into the path of said piston. As the piston nears the bottom of its stroke, the interference between the piston and annulus, which gradually increases by virtue of said sloping arrangement, brings the piston to a stop in a short distance.

3,828,657

PISTON FOR SWASH PLATE PUMP

Milton C. Neuman, Golden Valley, Minn., assignor to FMC Corporation, San Jose, Calif.

Filed June 29, 1972, Ser. No. 267,299
Int. Cl. F16j 1/00
U.S. Cl. 92—258 6 Claims



A piston assembly for a hydraulic swash-plate pump is provided with a floating bearing which compensates for lateral

flexure of the piston to achieve substantially total contact with the cylinder wall regardless of piston flexure and thus minimize the tendency of the piston to wear the open end portion of the cylinder out of round.

3,828,658

METHOD AND APPARATUS FOR PRODUCING CIGARETTE FILTER SLEEVES

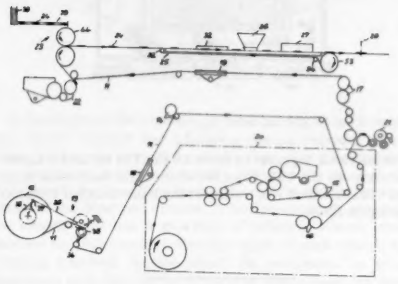
Helmut Brodbeck, and Hans Haller, both of Trossingen, Germany, assignors to Efka-Werke Fritz Kiehn GmbH, Trossingen/Wurtt., Germany

Filed May 19, 1972, Ser. No. 255,107

Claims priority, application Germany, May 21, 1971, 2125118

Int. Cl. A24c *5/50*

U.S. Cl. 93—1 C **28 Claims**



In a method of producing cigarette filter sleeves, a paper tape is moved at constant velocity and spaced, single or double, filters are placed and adhesively fixed to the tape. Once the filters have been fixed to the tape the tape is wrapped, with the exception of a projecting edge portion of the tape, around successive filters using an endless moulding belt to feed the tape. An adhesive is then applied to the projecting edge portion, which is closed to form a continuous sleeve. The continuous sleeve is cut into individual cigarette filter sleeves.

3,828,659

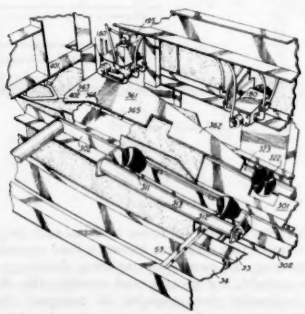
METHOD OF FOLDING A BOX BLANK

Donald G. Reichert, Tarpon Springs, Fla., assignor to ABC Packaging Machine Corporation, Largo, Fla.

Division of Ser. No. 222,617, Feb. 1, 1972, Pat. No. 3,763,750. This application May 11, 1973, Ser. No. 359,307

Int. Cl. B31b *1/36, 49/02*

U.S. Cl. 93—49 M **11 Claims**



A machine for forming a box from a collapsed blank that includes four interconnected sidewalls having four alternately interconnected end flaps extending therefrom, in which each blank is folded flat with one pair of interconnected end flaps facing the other pair of interconnected end flaps in juxtaposition to one another. The box forming machine includes a magazine assembly for supporting a plurality of blanks in vertically oriented planes and includes means for successively dispensing individual blanks to the receiving end of the box forming machine. The receiving end of the box forming machine includes means for spreading the extended end flaps wherein one pair of interconnected end flaps is angularly disposed to one side of the plane of the collapsed blank and the second interconnected pair of end flaps is angularly disposed on an opposite side of the plane of the collapsed blank. Means is provided for retaining the flaps in their spread relationship while conveyor means advances the collapsed blank to an end flap folding station which includes means for folding the pairs of end flaps back against their respective connected sides. The collapsed carton blank is then moved to a box opening station having means for engaging and angularly displacing one side of the collapsed blank to an open position while an adjacent interconnected side is engaged and held in a fixed position by stabilizing means. After the box has been opened, the bottom end flaps are folded upwardly to a position aligned with the bottom of the box.

3,828,660

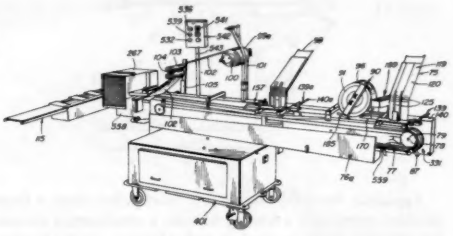
MACHINE FOR MAKING ICE CREAM COOKIE SANDWICHES AND SIMILAR FOOD PRODUCTS

Martin Mueller, Glenview, Ill., and Mason C. Wingo, Roanoke, Va., assignors to Bates Packaging Service, Inc., Des Plaines, Ill.

Filed May 26, 1972, Ser. No. 257,400

Int. Cl. A21c *9/04, 15/02;* **B65b** *9/06*

U.S. Cl. 99—450.4 **39 Claims**



A machine for making ice cream cookie sandwiches and similar edible food products such, for example, as soft cheese cookie or wafer sandwiches; all hereinafter referred to as ice cream cookie sandwiches. At the first work station a first storage magazine or hopper is provided for the first or bottom cookies, wafer, or the like, from which the first or bottom cookies are deposited, one at a time, onto a guideway, or trackway along which they are moved by an endless conveyor unit which embodies article-advancing means, and by which the first or bottom cookie or wafer is carried to a second work station where a measured quantity of ice cream, or like edible body, is deposited from a rotary extruder head device onto the upper surface of the first or bottom cookie or wafer to form the edible filler body in the completed ice cream cookie sandwich, or the like. The first or bottom cookie or wafer with the ice cream filler body thereon is then moved along the guideway or trackway by the endless conveyor and the article-advancing means thereon to a third work station where a second or top cookie or wafer is deposited from a second storage magazine or hopper onto the upper surface of the edible filler body of ice cream, or the like. The thus formed ice cream cookie sandwich is then moved along the guideway or trackway by the endless conveyor and its article-advancing

means to a fourth work station where it is wrapped in a web of flexible, heat-sealable water-resistant sheet wrapping material such, for example, as waxed paper, flexible plastic wrapping film, or the like. The wrapped ice cream cookie sandwich is then moved further along the guideway or trackway by the endless conveyor and its article-advancing means to a fifth work station where the parallel bottom edge portions of the flexible, heat-sealable water-resistant wrapper are heat-sealed to each other; then to a sixth work station at which the parallel end edge portions of the flexible, heat-sealable water-resistant wrapper are heat-sealed together; and finally to a seventh and final work station at which the thus wrapped and heat-sealed ice cream cookie sandwiches are severed or cut from each other, in a chain of the same, by a web-cutting or web-severing device and are delivered to a take-away or delivery conveyor for delivery to a freezer for storage or for use.

3,828,661

APPARATUS FOR THE PRODUCTION OF FOOD PELLETS FROM A FLOUR PRODUCT

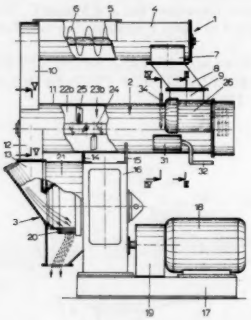
Johannes Albertus Vink, Breukelen, Netherlands, assignor to CPM/Europe N.V., Amsterdam, Netherlands

Filed Aug. 25, 1972, Ser. No. 283,814

Claims priority, application Netherlands, Sept. 3, 1971, 7112111

Int. Cl. A23k *1/20*

U.S. Cl. 99—483 **7 Claims**



Apparatus for the production of food pellets from a flour product comprising a feeding section, a conditioning section for blending the flour product with additives and for heating and moistening the mixture, and a press section for pressing out the prepared flour product into pellets. The conditioning section includes two separate parallel adjacently and substantially horizontally disposed identical conditioning chambers each with a mixing and conveying means, both conditioning chambers having one common inlet duct connected to the feeding section arranged immediately thereabove and having one common outlet duct connected to the press section arranged immediately therebelow whereby the stream of flour flowing from the feeding section to the press section is, in the intermediate conditioning section, divided into two parallel product streams allowing a more effective processing of the flour passing through said chambers.

3,828,662

SYSTEM AND APPARATUS FOR HANDLING GREEN LEAF TOBACCO AT THE WAREHOUSE LEVEL

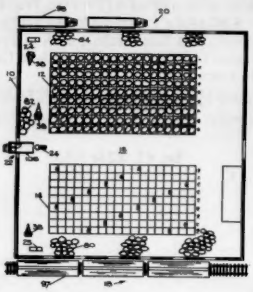
Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Nov. 6, 1972, Ser. No. 304,284

Int. Cl. B65b *13/20*

U.S. Cl. 100—7 **2 Claims**

A system and apparatus for use in baling sheets of tobacco at a warehouse so that the tobacco can be handled and transported more easily, including a lift and transfer vehicle and a compactor. The lift and transfer vehicle is used to stack a plurality of sheets of tobacco into the compactor so that the stack can be compressed. A set of cross straps are used to secure the



compressed stack together to form a bale. The lift and transfer vehicle removes the bale from the compactor and loads it on another vehicle which will transport the bales to other tobacco processing facilities.

3,828,663

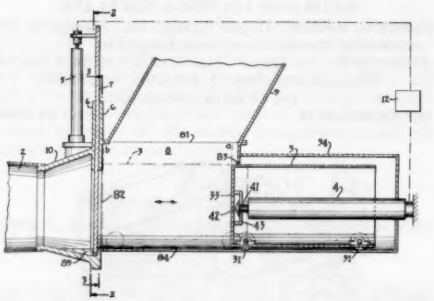
COMPACTOR FOR USE IN COMPACTING AND DISCHARGING LOOSE MATERIAL

Charles A. Poplinski, 48 Urban Ave., Long Island, N.Y. 11590

Filed Nov. 17, 1971, Ser. No. 199,549

Int. Cl. B30b *1/32, 15/32*

U.S. Cl. 100—42 **19 Claims**

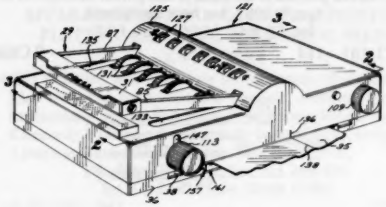


Disclosed is a compactor for loose material such as garbage, including a compacting chamber having a feed opening and a discharge opening; an outwardly tapering discharge funnel; gate means operable for closing and opening the discharge opening; a hydraulic ram operable to compact the loose material in the chamber when the gate is closed and to expel a major portion of the compacted material when the gate is open; means for selfcleaning the gate and means for controlling the operation of the gate and of the ram.

3,828,664
CHECK PROTECTOR

Joseph K. Dikoff, 5949 Lemona Ave., Van Nuys, Calif. 91401

Filed Nov. 3, 1972, Ser. No. 303,534
Int. Cl. B41k 3/08
U.S. Cl. 101—19 7 Claims

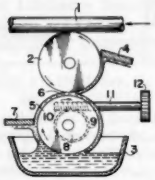


A check protector including a base having a check receiving tray carried thereon and a floating chassis disposed over such base. Guide pins project upwardly from the base and engage the chassis to guide it vertically downwardly as it is moved downwardly against the force of biasing springs interposed between the base and chassis. A horizontal shaft is carried by the chassis and has a plurality of printing wheels mounted thereon for independent rotation, each of such wheels having printing numbers spaced about its periphery for selective alignment over the check. A lever is interconnected between the base and chassis and is formed on its free end with a handle for depression to urge the chassis downwardly toward the check tray to bring the selected numbers on the printing wheels into engagement with a check carried on such tray.

3,828,665
MARKING APPARATUS FOR ELONGATED OBJECTS

Katsutoshi Ogura, and Katsuichi Chikazawa, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed May 21, 1970, Ser. No. 39,407
Claims priority, application Japan, May 27, 1969, 44-48974; May 27, 1969, 44-48975
Int. Cl. B41l 27/08
U.S. Cl. 101—36 1 Claim

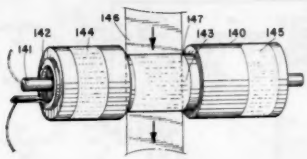


Marking apparatus for printing on the surface of elongated objects, comprising a rotatable marking roll adapted to engage the object, a rotatable feeding roll partially immersed in an ink trough and being in engagement with the marking roll to transfer ink thereto, an assembly for causing the feeding roll to rotate at a lower speed than the marking roll, and an automatic ink feed device which supplies ink to the trough.

3,828,666
SIMULTANEOUS EMBOSSING AND PRINTING

Anthony Apicella, 138 Bodman Pl., Marbella, 07701

Continuation-in-part of Ser. No. 191,935, Oct. 22, 1971, abandoned.
Filed July 25, 1973, Ser. No. 382,563
Int. Cl. B44b 5/00
U.S. Cl. 101—24 22 Claims

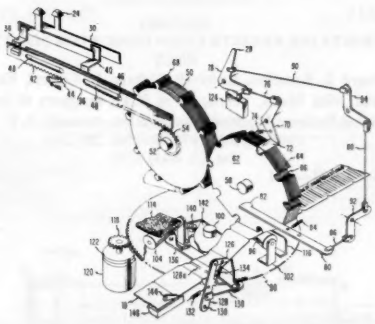


A hot stamping printing press has type dies higher than stamping dies so that more than one print die and stamping die and foil can simultaneously print without interference with each other at a single press stroke.

3,828,667
LABEL PRINTING MACHINE

Wilbur M. Davis, and Robert E. Yates, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1972, Ser. No. 317,019
Int. Cl. B41j 1/44
U.S. Cl. 101—66 2 Claims

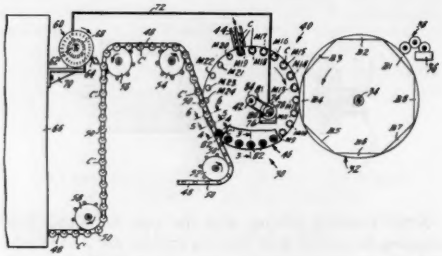


A machine for printing identical characters on a series of connected labels including a stack of type wheels each having a series of different bossed print characters on its periphery. A rotatable disk carries an ink transfer roll and a pressure roll. The ink transfer roll rolls across aligned print faces of the type wheels, and the pressure roll then forces a label of the connected series of labels into printing contact with the print faces as the disk rotates. The connected labels are fed one at a time into registry with the aligned print faces of the type wheels for printing the labels one after the other. A manually operated linkage is connected with each of the type wheels for adjusting each type wheel with respect to the other type wheels so as to change the character printed by each of the wheels at will, and the wheels are held against relative rotation during a single run of the connected labels.

3,828,668
IDENTIFICATION SYSTEM

Joseph Paul Zugcic, Morganville, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Oct. 6, 1972, Ser. No. 295,420
Int. Cl. B41f *17/22*; **B65g** *43/00*
U.S. Cl. 101—40 **27 Claims**

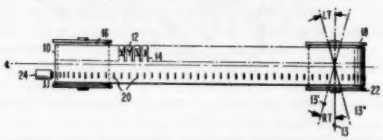


Identification system and method of correlating downstream work pieces with upstream working members for a work operation such as a can decorator line wherein a rotatable correlator disc having indicia radially thereon, located downstream adjacent a conveyor, correlates workpieces and/or their sites on an adjacently passing workpiece conveyor with upstream working members so that downstream identification can be made of working members that were in register or working relationship with the workpieces and/or their corresponding sites during operation of the working members. Direct relationship is established preferably by servo means between the rotation of the correlator disc and the working members.

3,828,669
PRINT LINE REGISTRATION INDICATOR FOR TYPE BELT

Edward J. Bonafino, Endwell; Richard L. Gilbert, Endicott, and John Mako, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 8, 1972, Ser. No. 287,323
Int. Cl. B41j *1/20*
U.S. Cl. 101—111 **1 Claim**

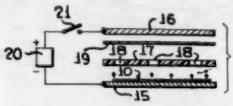


A type belt having spaced apart type characters thereon, also has a plurality of timing marks, one for keeping track of the different character positions. A transducer is positioned to sense the timing marks as they move in a horizontal direction for operating print controls in timed relation with the positions of the type characters as they move along the print line and also detect differences in amplitude of the transducer output signals caused by vertical movement of the type belt. The output is used to operate indicating means which tells which position will print next, and which can also be used to enable the operator to detect misregistration of the type belt, so that the operator may correct it.

3,828,670
METHOD AND APPARATUS FOR ELECTROSTATIC PRINTING USING TRIBOELECTRIC INKING DEVELOPERS

John B. Kennedy, Oak Forest, Ill., assignor to Continental Can Company, New York, N.Y.

Division of Ser. No. 772,438, Oct. 31, 1968, Pat. No. 3,504,624, which is a continuation of Ser. No. 386,182, July 30, 1964, abandoned. This application Feb. 17, 1970, Ser. No. 11,952The portion of the term of this patent subsequent to Apr. 7, 1987, has been disclaimed.
Int. Cl. B41f *15/00*; **B05b** *5/02*
U.S. Cl. 101—114 **9 Claims**

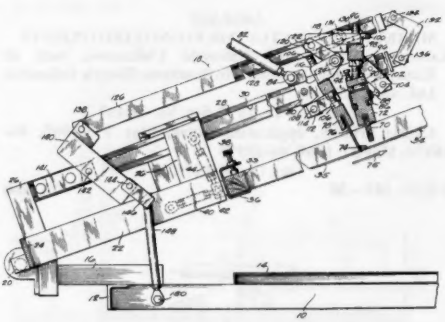


An electrostatic coating and printing process and apparatus wherein electrically conductive carrier particles and electrically non-conductive toner particles are actuated by an electric field to cause at least some of the carrier particles and toner particles to impinge upon a substrate for applying a selective coating thereto. A stencil screen may be interposed along the path of movement of the particles such that the substrate is coated in a pattern defined by apertures in the stencil screen.

3,828,671
SQUEEGEE AND FLOOD BAR ACTUATOR WITH PEELING SCREEN CLAMP

Alvin J. Fuchs, Milwaukee, Wis., assignor to Medalist Industries, Inc., Milwaukee, Wis.

Filed Nov. 16, 1972, Ser. No. 307,322
Int. Cl. B41f *15/36*, *15/42*
U.S. Cl. 101—123 **16 Claims**



The squeegee and flood bar assemblies of a screen printing machine are reciprocally moved along a spaced pair of parallel rails to alternately effect a printing stroke and a flood stroke. The rails are part of a frame which is pivoted for tilting movement between a printing position and a flood position. The squeegee assembly is slideably engaged in a third rail or control rail which is raised and lowered in coordination with the movement of the frame to lower the squeegee into contact with the printing screen at the start of the printing stroke and to raise it above the screen at the start of the flood stroke. The flood bar assembly is linked to the squeegee assembly to raise the flood bar when the squeegee is lowered and to lower the flood bar when the squeegee is raised. The front end of the printing screen is held in a clamp which is suspended below

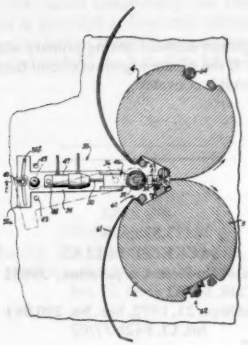
the parallel rails and includes a rod rotatably attached to the frame along an axis which is transverse to the rails, a pair of spaced lever arms projecting from the rod, and a linear clamp member suspended from the lever arms. The rear end of the screen is suspended from the frame by turnbuckles which allow the position of the screen to be manually adjusted.

3,828,672

APPARATUS FOR FITTING FLEXIBLE PRINTING PLATES AND RIGGING TO PRINTING PRESS CYLINDERS

Ivaldo Gazzola, deceased, late of Lausanne, Switzerland; by Eles Gazzola; by Lanfranca Gazzola, both of Lausanne, Switzerland (heirs); Salvatore F. D'Amato, Floral Park, and Chauncey P. Foote, Jr., Katonah, both of N.Y., assignors to American Bank Note Company, New York, N.Y.

Filed Oct. 17, 1972, Ser. No. 298,376
Int. Cl. B41f *13/24*; B65h *37/00*
U.S. Cl. 101—247 **7 Claims**



This printing press includes improved mechanism for clamping the edges of a flexible printing plate adjacent the leading and trailing edges of the saddle of a printing press cylinder. An auxiliary roll mechanism permits the flexible printing plate or rigging sheet to be held smooth and under tension during its installation on the cylinder.

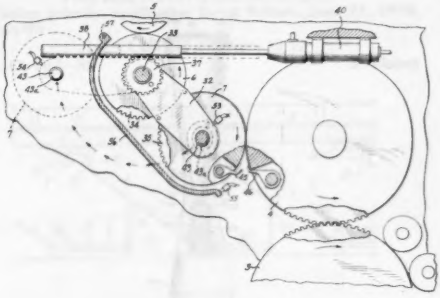
3,828,673

PAPER FEED MECHANISM FOR CYLINDER PRESS

Ivaldo Gazzola, deceased, late of Lausanne, Switzerland (by Eles Gazzola and Lanfranco Gazzola, heirs); Salvatore F. D'Amato, Floral Park, and Chauncey P. Foote, Jr., Katonah, both of N.Y., assignors to American Bank Note Company, New York, N.Y.

Filed Oct. 17, 1972, Ser. No. 298,444
Int. Cl. B41f *21/08*
U.S. Cl. 101—232 **11 Claims**

Apparatus for supplying sheets to be printed to the impression cylinder of an intaglio press, including a first sheet feeding cylinder for transferring sheets to the impression cylinder. The first sheet feeding cylinder is fixed on a shaft journaled on the ends of a pair of links, which are pivoted at their other ends for rotation about a fixed axis. A second sheet feeding cylinder and a gear are fixed on a shaft which rotates about that axis. The links are rotatably mounted on that shaft, which is driven in synchronism with the plate cylinder of the press. A gear fixed on that shaft meshes with another gear fixed on the shaft of the first sheet feeding cylinder. The links may be driven by a motor and appropriate gearing to swing the first sheet feeding cylinder between a printing position where it is in rolling contact with the impression cylinder and a retracted position where it is spaced from the impression cylinder far



enough to allow access to the impression cylinder and the plate cylinder.

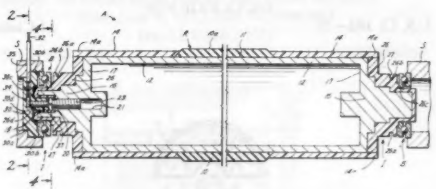
Latches may be provided for holding the paper feed cylinder in either its printing position or its retracted position.

3,828,674

PRINTING PRESS INK SUPPRESSION APPARATUS

Jereld L. Underwood; Floyd D. Edmoundson, and Milton M. Dolezal, all of Houston, Tex., assignors to Houston Chronicle Publishing Company, Houston, Tex.

Continuation of Ser. No. 230,776, March 1, 1972, abandoned.
This application Apr. 25, 1973, Ser. No. 354,444
Int. Cl. B41f *31/26*
U.S. Cl. 101—349 **5 Claims**



The present invention provides a new and improved method and apparatus for suppressing ink mist in and around printing presses, reducing the risk of fire and waste of ink.

3,828,675

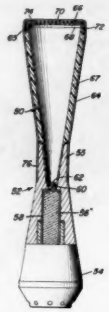
MUNITION

Charles L. Brohawn, Halethorpe, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 10, 1957, Ser. No. 319,803
Int. Cl. F42b *25/00*
U.S. Cl. 102—2 **5 Claims**

1. A bomb comprising an enlarged weighted nose portion, a constricted neck portion and an enlarged tail portion, said tail

portion comprising an ampule having a conical wall and having its smaller end mounted within said restricted neck portion, a closure for the larger end of said ampule wall, a cover surrounding and in contact with the larger end and the conical wall of said ampule and secured to said constricted neck portion, said ampule and cover forming a casing having a conical cavity, the larger end of which is relatively fragile as compared to the walls thereof; and an explosive charge mounted within said enlarged nose portion adjacent to the smaller end of said ampule.

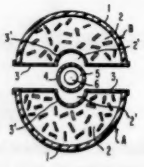


3,828,676

CONSUMABLE EXPLOSIVE CARTRIDGES

Ralph Daniel Junker, 33 N. Main St., Southampton, N.Y. 11968

Filed Jan. 18, 1973, Ser. No. 324,669
Int. Cl. F42b *9/00*
U.S. Cl. 102—39 **11 Claims**



A consumable explosive cartridge includes an explosive charge defining therewithin a recess. A primer material is disposed within the recess and is of less volume than the volume of the recess to resist premature detonation of the cartridge.

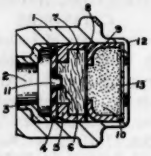
A method for making the cartridge includes the steps of providing a pair of cartridge half sections, each containing an explosive charge and a recess section. A primer material is inserted within one of the recesses and the half sections are secured together with the primer material being disposed within a recess formed by the recess sections.

3,828,677

ELECTRIC IGNITION ELEMENT WITH SECONDARY IGNITION CAPABILITY

Stanley J. Kaszupski, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 11, 1973, Ser. No. 368,927
Int. Cl. F42b *5/08, 9/08*
U.S. Cl. 102—46 **9 Claims**



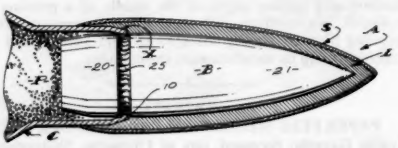
An electric ignition element having primary and secondary ignition circuits. If the primary ignition circuit fails, the secondary ignition circuit is activated.

3,828,678

JACKETED BULLET

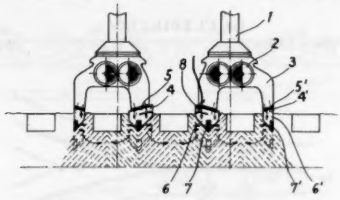
John Bernath, c/o Du-Kote Corporation, 39651 Esplanade, San Jacinto, Calif. 92382

Filed Sept. 21, 1972, Ser. No. 290,961
Int. Cl. F42b *31/02*
U.S. Cl. 102—92 **10 Claims**



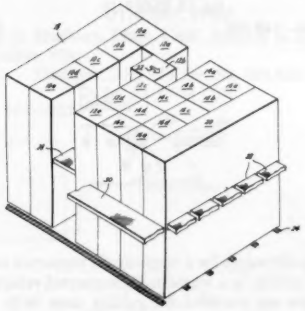
A self-lubricating, vapor trailing ammunition round including a jacket about the forward portion of the bullet and extending rearwardly about the forward portion of the casing, said jacket comprising an inner layer of plastic lubricous material with a low latent temperature of vaporization and a thin outer layer of hard, dry, frangible material. The jacket seals the annulus between the casing the the bullet. The jacket material about the casing lubricates the chamber of the fire arm on which it is engaged to prevent freezing of the casing on the chamber. A portion of the jacket material on the bullet lubricates the bore of the fire arm to extend bore life and creates an improved gas seal. A portion of the jacket remains on the bullet after it leaves the fire arm and is vaporized by friction heat between the jacket material and the air to produce a vapor trail.

3,828,679
TOOL FOR BALLAST COMPACTING MACHINE
Joseph Eisenmann, and Heinrich Helgemeir, both of Allmannshausenerstrasse 306, Munich 25, Germany
Filed May 30, 1972, Ser. No. 257,954
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 6 Claims



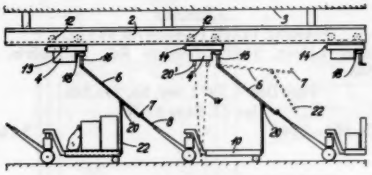
Railway track ballast compressing and shifting apparatus wherein there is provided at least one vibrating compacting tool acting on the ballast between sleepers for simultaneously compressing and shifting the ballast to fill voids beneath the sleepers.

3,828,680
STORAGE SYSTEM
Paul Lester Farren, 309 Westminster, Houston, Tex. 77024
Filed June 8, 1972, Ser. No. 260,892
Int. Cl. B61k *1/00*
U.S. Cl. 104—88 20 Claims



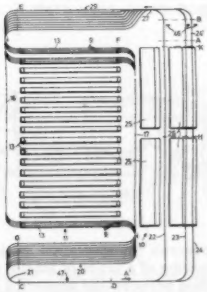
A multi-level storage system in which a plurality of storage units are supported in side by side relation, and are movable laterally with respect to one another to open and close aisles therebetween and provide access to various ones of the storage units, said storage units being provided with support means which support fixed flooring panels. In preferred embodiments of the invention the flooring panels extend through aligned storage units so that the storage units may be moved longitudinally of the flooring panels, and access to upper portions of the storage units is gained by walking on the flooring panels. Means are disclosed to bridge openings between the panels, such means being opened and closed by the movement of the storage units. A suspended storage unit is also disclosed.

3,828,681
CONVEYOR SYSTEMS
Svend Christensen, Risskov, and Jacob August Nielsen, Viby J., both of Germany, assignors to Crisplant A/S, Risskov, Denmark
Filed June 15, 1971, Ser. No. 153,391
Claims priority, application Great Britain, June 15, 1970, 28861/70
Int. Cl. B61b *5/00, 7/06, 13/12*
U.S. Cl. 104—88 23 Claims



A conveyor system comprising guide rails for a plurality of each of dogs which are provided with a driving motor so as to be individually driven along the guide rail. The dogs releasably connected to load carrier vehicles so as to pull these vehicles along between loading stations and unloading stations in which the vehicles may be released from the dogs. A spacing control arrangement is provided for maintaining sufficient spacing between consecutive vehicle loaded dogs according to the space requirements of the vehicles. The spacing control arrangement is rendered inoperative between an idle dog and the foregoing or following dog so as to enable an idle dog to catch up with a foregoing dog or to be caught up by a following dog. The system is well suited for automatic sorting conveyors, since the individually movable dogs may be guided over rail switches to any desired unloading station.

3,828,682
INSTALLATION FOR TRANSPORTING SPOOLS
Konrad Klein, Ebersbach-Sulpach, Germany, assignor to Zinser-Textilmaschinen GmbH, Ebersbach, Germany
Filed June 4, 1973, Ser. No. 366,683
Int. Cl. E01b *25/22*
U.S. Cl. 104—91 21 Claims



An installation for transporting filled spools produced in at least one first spinning machine to at least one second spinning machine having a spool railing and for transporting backward the empty spools to the first spinning machine or machines. This installation is preferably for transporting the spools between two groups of spinning machines concerned with different production steps. The second machine or group of machines constitutes the subsequent stage(s) of production. A

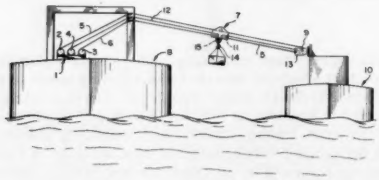
common rail system is operatively associated with the spinning machines on whose rails a plurality of carriages are disposed for transporting the spools. Spool holders for holding the spools are provided on each carriage. At least one rail runs along each spinning machine, this rail forming part of the rail system. The spool railing (gripper rail, frame or lattice) of the second spinning machine is formed by the at least one rail running along the side of this machine in combination with the carriages brought on that rail which at their arrival carry full spools.

3,828,683

MARINE LOAD TRANSFER SYSTEM

Alexander Lehrer, 1141 Greenway Rd., Alexandria, Va. 22308

Filed Dec. 4, 1972, Ser. No. 311,546
Int. Cl. B65g *67/58*
U.S. Cl. 104—114 **3 Claims**



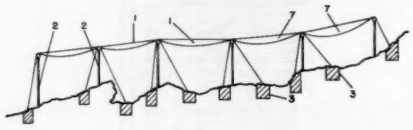
This system for transfer of a load at sea includes a three-drum winch that controls three lines, a set of sheaves mounted on a kingpost or mast on the supply ship, a block to be mounted to a padeye on the receiving ship, and a trolley that rides the lines between ships and raises, lowers and transports the load. The lines are maintained under relatively constant tension, responsive to motion of ships.

3,828,684

ELEVATED MONORAIL URBAN OR SUBURBAN TRANSPORTATION SYSTEM

Jorge Galvez Figari, Capitan Haya, 3 and 5, Madrid, Spain

Filed May 30, 1972, Ser. No. 257,493
Claims priority, application Spain, May 28, 1971, 391695
Int. Cl. E01b *25/14*
U.S. Cl. 104—124 **3 Claims**



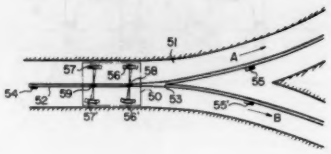
An elevated monorail transportation system employing a vehicle track consisting of a series of lengths of high strength cable each extending between and supported adjacent its end portion on adjacent support towers spaced along the track. The individual lengths of track cable act as one conductor for supplying electric power to the vehicles moving thereover, and a second cable extending generally parallel to and below the track cables acts as the second conductor. The ends of the track cables are supported on pulleys on the towers and are guided downwardly and laterally thereby in a direction to avoid interfernce with vehicles suspended on and moving over the track, with the ends of the respective track cables being anchored and retained under high tension at each support tower.

3,828,685

ROUTE CONTROL SYSTEM FOR GUIDED VEHICLES AND THE LIKE

Akinao Nara; Michio Hara, both of Kodaira; Seiichi Kanema, and Minoru Kano, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 28, 1972, Ser. No. 293,039
Claims priority, application Japan, Sept. 29, 1971, 46-75457
Int. Cl. E01b *25/06*
U.S. Cl. 104—130 **9 Claims**



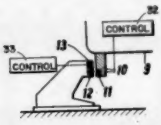
A route control system for guided vehicles and the like in which a guiding member provided on the guided vehicle is inserted into a guiding groove provided along a roadbed on which the guided vehicle is to be driven and a side wall of the guiding groove imparts contact pressure to the guiding member, said contact pressure being detected for producing a detection signal which is utilized for controlling the route of the vehicle.

3,828,686

MAGNETIC GUIDE FOR A RAILWAY VEHICLE

Ulf Steenbeck, Miesbach, and Hans Weidinger, Ottobrunn, both of Germany, assignors to Messerschmitt Bolkow-Blohm GmbH, Munchen, Germany

Filed Aug. 3, 1972, Ser. No. 277,782
Claims priority, application Germany, Aug. 10, 1971, 2140103
Int. Cl. B60l *9/18*
U.S. Cl. 104—148 MS **9 Claims**



Lateral guide means for a magnetically supported and track controlled vehicle. In a magnetically supported vehicle lateral guide means are provided for guiding same both along a straight or slightly curving portion of a track and for guiding same through a switch. One set of magnets is provided along one side of the vehicle and another set of magnets is provided along a guide rail adjacent the track. In one embodiment, either of said sets of magnets is a set of electromagnets and the other is a set of permanent magnets while in another embodiment all magnets are electromagnets. A similar arrangement is provided on the opposite side of the vehicle. By creating repelling forces between some of said magnets and attracting forces between others thereof, an accurately controllable lateral guide is developed for said vehicle by which same is caused to maintain an accurately controllable spacing between the vehicle and the side guiding means. A further modification includes combinations of linear motors on either side of the vehicle together with guiding magnets between the vehicle and a laterally positioned track.

3,828,687
TRANSPORT SYSTEM UTILIZING FLUID POWER

Joseph E. McKeen, 10861 Elm Ave., Lynwood, Calif. 90262

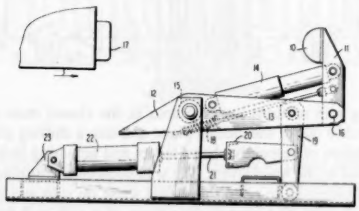
Filed Nov. 13, 1972, Ser. No. 306,074
Int. Cl. B61b 13/00
U.S. Cl. 104—154 10 Claims

A system is disclosed wherein a platform is advanced by utilizing fluid flowing through a flexible tube. The platform, in general, is supported by the fluid pressure within the tube thereby causing a pinching action in the tube, and in turn a resulting force component is produced that is directed upward and forward. This force acts on the platform, propelling it forward. In the preferred embodiment the platform comprises a pair of wheeled trucks pivotably mounted and spaced apart in relationship for and aft on a body. The trucks each have a pair of rollers, and each roller rests on respective flexible tubes, spaced apart like railroad tracks. Suitable means are provided to keep the rollers on the tubes as the platform is propelled. In addition, means are provided to prevent excess lifting to the platform when the platform is light in weight, and means are provided to prevent complete pinching of the tubes by the rollers when the platform is overloaded. The respective platform bodies, when used as moving sidewalks, are made flat with the body of the front platform overlapping the body on the aft platform, and the two bodies are suitably pinned to allow the system to move around corners without interrupting the continuity of the sidewalk.

3,828,688
DYNAMIC STOP

Bernard G. Bradbury, Chico, Calif., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 24, 1972, Ser. No. 309,026
Int. Cl. B61k 7/18
U.S. Cl. 104—252 6 Claims

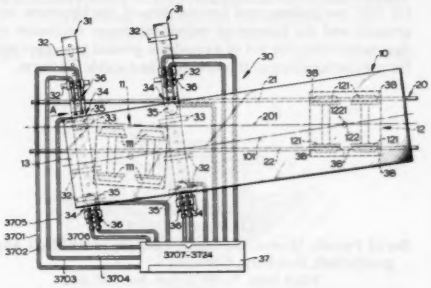


A dynamic stop for an operator-less railway transportation system consisting of an arm positioned between the tracks of the transportation system and pivotably mounted so that it does not interfere with the passage of the cars of the railway transportation system when not in use, but may be rotated up so that an absorbent stop plate mounted thereon will contact an absorbent bumper mounted on the front of the car which it is desired to stop. The dynamic stop may be mounted on a reciprocating device to further absorb the energy of contact.

3,828,689
DEVICE FOR RERAILING RAIL VEHICLES

Bruno Raffenberg, Dortmund, Germany, assignor to Hoesch Maschinenfabrik Deutschland Aktiengesellschaft, Dortmund, Germany

Claims priority, application Germany, July 8, 1972, 2233756
Filed June 4, 1973, Ser. No. 366,503
Int. Cl. B61k 5/00
U.S. Cl. 104—273 10 Claims

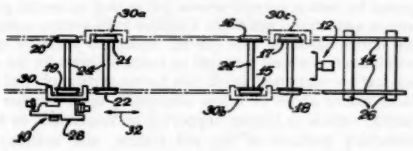


A device for returning derailed rail vehicles to the rails on which the vehicle runs which includes bridge means extending laterally of the rails and disposed fore and aft of the derailed wheel set of the vehicle. Trucks are mounted on the bridge means and having hoists thereon for engaging the underneath side of the vehicle to lift the vehicle so that the wheels are above the rails. With the vehicle so lifted, the trucks are moved on the bridge means to locate the bridge means over the rails and the vehicle is then set down so that the wheel set again engages the rails. The hoists are mounted on plates which are pivotal about vertical axes on the respective trucks while having freedom of movement on the respective trucks in a direction substantially parallel to the longitudinal axis of the vehicle.

3,828,690
PORTABLE RAILWAY CAR MOVER

T. Dale Stewart, New Kensington; Thomas D. Stewart, Murrysville, both of Pa., and Charles F. Hautau, Oxford, Ohio, assignors to Shippers Automation, Inc., New Kensington, Pa.

Filed Feb. 14, 1972, Ser. No. 225,913
Int. Cl. B61b 13/12, 15/00; B61j 3/12
U.S. Cl. 105—90 A 8 Claims



Power attachment made to the lower portion of a rail car wheel, at the outer side thereof, to render a railway car self-propellable bidirectionally. The structure includes a roller-carrying C-clamp which, from a side entry position relative to the car to be moved, draws in with a power clamping action against the tread of the wheel at that side so as to interpose first rollers between the jaws of the clamp and the wheel, and other rollers between the clamp and the rail beneath the car wheel. The structure also includes a power unit for bidirectionally driving the first rollers, for collapsing the C-clamp under power to partially support the wheel on the rail, and for bidirectionally driving a set of extendible ground

transport wheels which are provided for the structure and which, when extended from a retracted position, render the attachment self-propellable on the ground independently of the car and the rail.

Primarily involved herein are the feature of broad spacing between two end wheels among the ground transport wheels and reversible wheel motors connected thereto for accurate positioning of the structure on the ground, the feature of an outboard-located dirigible wheel among the ground transport wheels and mutually at the positions of the apices of a triangle for said positioning and for stability of the structure on the ground, and the feature of individual power extension cylinders controlling the set of extendible ground transport wheels for precise levelling of the structure as a stable platform.

3,828,691
RAILWAY VEHICLE

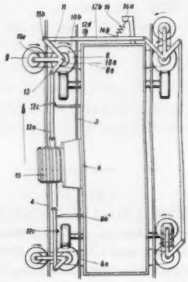
Bernd Purath, Wetter, Germany, assignor to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed Sept. 7, 1973, Ser. No. 395,041

Claims priority, application Germany, Sept. 7, 1972, 2243910

Int. Cl. E01b *23/12*

U.S. Cl. 105—145 **14 Claims**



Disclosed herein is a new and improved railway vehicle supported by rimless support wheels and guided by special guide wheels and control wheels on a unique track system comprising horizontal main rails having horizontal surfaces upon which traction wheels mounted on horizontal axes for the railway car are supported, guide rails having vertical control surfaces spaced above or below (depending upon whether the railway vehicle is bottom supported or suspended) in nonbranching portions of the rail system, and auxiliary or directional rails also having vertical control surfaces. The vertical surfaces of the directional rails contact the control wheels mounted on the railway vehicle for controlling che direction that the railway vehicle takes in traversing a branch. The guide wheels and control wheels are mounted on vertical axes for rotation in horizontal planes and are supported on a unique linkage which is adapted, under a dynamic control influence applied from within the vehicle itself or from a static camming control influence applied by a steering rail disposed in the railway path prior to a junction (in which pairs of tracks are merging or diverging), to pivot the control wheels about the guide wheels to contact a selected one of the directional rails for the purpose of properly and safely directing the railway vehicle as it traverses the junction.

3,828,692
SYSTEM FOR TRANSMITTING TRACTION AND BRAKING FORCES IN A RAIL VEHICLE

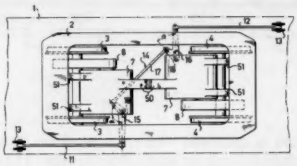
Ernst Florian Kreissig, Seuzach, Switzerland, assignor to Schweizerische Lokomotiv-und Maschinenfabrik, Zurich, Switzerland

Filed Sept. 25, 1972, Ser. No. 291,933

Claims priority, application Switzerland, Sept. 24, 1971, 13967/71

Int. Cl. B61f *5/24*

U.S. Cl. 105—165 **8 Claims**



The running gear and vehicle body have a linkage connecting each to transmit traction and braking forces in a smooth kinetically accurate manner. The linkage includes a pair of draw bars which are pivotally connected to either the body or running gear and are longitudinally inclined to the horizontal. These bars are interconnected together at their opposite ends by a coupling means.

The coupling means can be in the form of an assembly including a connecting rod and a pair of levers; a connecting rod, guide arm and a pair of levers; a single pivotally mounted connecting rod; or a pair of fluid pressure cylinders which interact with pistons on the ends of the draw bars.

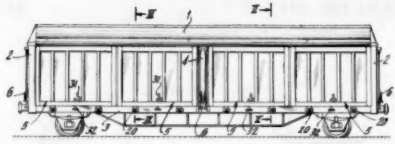
3,828,693
SLIDING WALL ARRANGEMENT FOR COVERED RAILROAD FREIGHT CARS AND CONTAINERS

Gerhard Kampmann, Netphen-Dreis-Tiefenbach, and Felix Schneider, Netphen-Eckmannshausen, both of Germany, assignors to Waggon Union GmbH, Siegen, Germany

Filed Apr. 16, 1973, Ser. No. 351,811

Int. Cl. E01b *17/00*

U.S. Cl. 105—378 **16 Claims**



Sliding wall sections are co-planar in the closed state and are movable out of the closing plane and into a shifting plane by operation of respective hand levers and actuating linkage connected to the hand levers. The wall sections are displaceable longitudinally, to open the sliding walls, on rolls engaging fixed wall parts and intermediate posts of a side wall frame having an upper stringer, a lower outer beam and corner posts. Sealing of the vertical edges of the sliding wall sections to each other and to the corner and intermediate posts of the side wall frame is effected by labyrinth packings. Each actuating linkage is operable to oscillate a respective upper shaft about a longitudinal axis, and each upper shaft has at least two levers extending therefrom and rotatably mounting rollers in their free ends. Brackets are supported on the floor of the container, adjacent the lower outer beam, by parallel linkages for substantially horizontal movement transversely of the container, each bracket including a vertical web plate on its outer

end extending longitudinally of the container, and each web plate, in the outer position of each bracket, conformingly fitting in a cutout in a depending leg of the lower outer beam. The respective parallel linkages include levers secured to respective lower shafts oscillatable about a longitudinal axis by the associated actuating linkage. Arms on the upper portion of each wall section support runner rolls rotatable about horizontal axes, and have supporting cams cooperating with the first mentioned rolls. Lower supporting arms on each wall section rotatably support rolls for rotation about vertical axes and have channel-shaped guide clamps embracing the web plate of the associated bracket and operable to embrace the vertical leg of the lower outer beam. Each wall section, when moved into the shifting plane by oscillation of the upper and lower shafts, is displaceable longitudinally by engagement of its runner rolls with a continuous runner rail and by engagement of its lower rolls with the outer surface of the dependent leg of the outer beam. Interengageable metallic seals are provided on the ends of the wall sections, with each seal including a series of sealing sections arranged along the associated vertical end, the sealing sections having bevelled outer sealing surfaces which alternately slant in respective opposite directions. Profile strips at each corner and intermediate post are arranged to rotate about vertical axes and engage the ends of a wall section when the latter is being moved into the closing plane to guide the section obliquely toward the longitudinal center line of the container to effect tight sealing engagement of the sealing surfaces of the section with the mating sealing surfaces of an adjacent wall section already in the closing plane.

3,828,694

ADJUSTMENT- AND ARRESTING MECHANISM ESPECIALLY FOR A DRAFTING TABLE

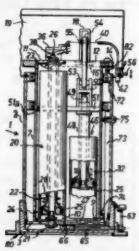
Richard Nestler, Lahr, and Peter Doetsch, Altdrossenfeld, both of Germany, assignors to Massstabfabrik Schaffhausen AG, Schaffhausen, Switzerland

Filed Jan. 18, 1971, Ser. No. 107,047

Claims priority, application Switzerland, Jan. 19, 1970, 706/70

Int. Cl. A47f 5/12

U.S. Cl. 108—10 **17 Claims**



There is disclosed an adjustment and arresting mechanism, especially for a drafting table, although other uses are contemplated, wherein adjustments are to be carried out substantially along a straight line and/or about at least one axis. The mechanism of the invention comprises an adjustment and arresting cylinder for each adjustment to be performed along the aforementioned straight line or about the aforementioned axis, each such cylinder possesses a predetermined swept volume filled with a fluid medium. Furthermore, piston arrangement is provided for each such cylinder and includes a piston rod and a double-acting piston member within the associated cylinder not sub-dividing the swept volume into two partial chambers. There are also provided means defining a communication channel between both of the partial chambers to permit the flow of the fluid medium from one partial chamber to the other and shut-off valve means for such communication channel. The cylinder is operatively connected with one of two relatively movable members while the piston rod is operatively connected with the other of two relatively movable members.

3,828,695

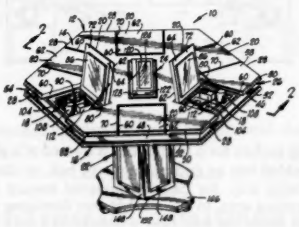
TABLE APPARATUS

Floyd E. Skarky, 3431 N. Utah, Oklahoma City, Okla. 73120

Filed Aug. 8, 1972, Ser. No. 278,794

Int. Cl. A47b 85/00, 81/00

U.S. Cl. 108—26 **5 Claims**



An improved table apparatus for displayingly supporting predetermined objects, particularly useful for teaching patients personal oral hygiene while functioning as a consultation and decorator table, in one form; the table apparatus having a table top removably supporting a plurality of support modules; lids movably connected to the table top enclosing the support modules in a closed position thereof, the upper faces of the lids cooperating to form a portion of the upper surface of the table top in closed positions thereof; and a table base enclosing a utility storage area.

3,828,696

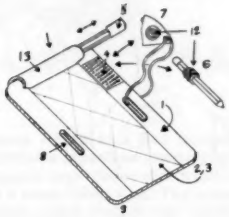
SAFETY KNEEBOARD

James E. Lockridge, Kailua, Hawaii

Filed Mar. 20, 1972, Ser. No. 236,062

Int. Cl. A47b 23/00, 37/00

U.S. Cl. 108—43 **7 Claims**



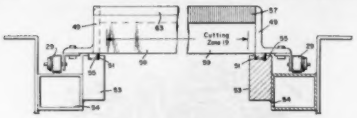
This invention relates to a flexible flat safety kneeboard for use in ejection seat aircraft to prevent injury to the wearer and physically, jaming the aircraft controls. The surface may be a write-on/erasable type. A phosphorescent layer may be used between the structural surface and a write-on/erasable surface whereupon writing may be effected with a common pencil and may be read in otherwise total darkness. Non-metallic plastic slide lock clamps may be used to hold flight forms or note paper. Velcro, may be used to receive and hold a pencil, or miniature flashlight. A lanyard attaching means may be attached to the kneeboard piano.

3,828,697

WORKING SURFACE FOR RADIANT ENERGY BEAM CUTTER

Georgette S. Egan, Granada Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 218,896, Jan. 19, 1972. This application Mar. 8, 1973, Ser. No. 339,471
Int. Cl. B65d 19/00; B23k 9/00
U.S. Cl. 108—51 4 Claims



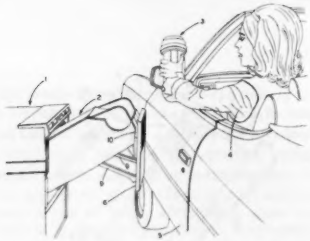
A cutting surface for a laser cutter is formed of a plurality of slats assembled into an endless conveyor belt, or alternatively into a slidable tray, for carrying material toward and away from the cutting area. In order to prevent damaging reflection of the laser beam the slats have a honeycomb core held rigid by knife-edged support members.

3,828,698

DEAL DRAWER SAFETY DEVICE

Charles E. Delamater; Herbert C. Obermiller, both of Canton, and John C. Kryah, Akron, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed Apr. 16, 1973, Ser. No. 351,555
Int. Cl. E06b 7/32
U.S. Cl. 109—19 9 Claims



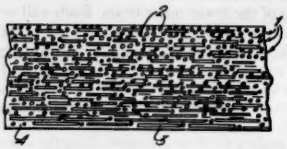
A mounting construction for rectangular resilient bumper pad loosely mounted with limited movement in any direction with respect to a rectangular closure head mounted on the end of a movable deal drawer for banking or business equipment. The bumper pad has switch means mounted thereon adjacent at least two of its four corners. The deal drawer closure head has grooved channel-like actuator members located operatively adjacent each switch so that relative movement of the bumper pad at any location thereof, either toward or away from the deal drawer head, actuates at least one switch. These switches are connected in control circuits with a motor drive for the deal drawer so as to stop or reverse movement of the deal drawer upon actuation of any switch.

3,828,699

ARMOUR

Dennis Herbert Bowen, North Stoke, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 18, 1972, Ser. No. 281,779
Claims priority, application Great Britain, Aug. 19, 1971, 39075/71
Int. Cl. F41h 5/00
U.S. Cl. 109—80 10 Claims



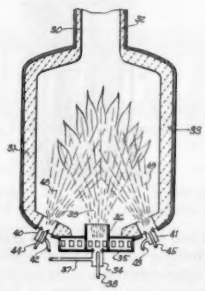
An armour comprising a composite material consisting of a mixture of hard particulate material and fibrous material dispersed throughout a matrix material, the distribution of the particulate and fibrous materials through the matrix material being such that the properties of the composite material change progressively from predominantly hard at one surface to predominantly resilient at another surface, and a method of manufacturing the armour in which a plurality of sheets of material the compositions of which may vary so far as the ratio of particulate to fibrous material is concerned are stacked together and hot-pressed at a temperature sufficient to cause the matrix material to flow so as to form a unified voidfree composite material the properties of which vary progressively throughout the material from predominantly hard at one surface to predominantly resilient at the opposite surface.

3,828,700

PROCESS FOR THE SMOKELESS BURNING OF RESIDUES, AND APPARATUS THEREFOR

Raymond Ragot, Melle, France, assignor to Speichim, Paris, France

Filed Apr. 4, 1973, Ser. No. 347,852
Claims priority, application France, Apr. 6, 1972, 72.12702
Int. Cl. F23g 7/00
U.S. Cl. 110—7 S 8 Claims

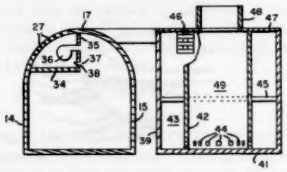


A process and apparatus for use in treating industrial residues such as chemical waste which are in a liquid form but which are substantially uncombustible. The invention provides for the combination of the residues with at least 30 percent by weight combustible substances, preferably substances which are also waste materials, and the burning of the combination at the base of a chimney. The chimney is designed for the introduction of air into the burning zone, and a mechanism for producing a spray of the residue and substances introduced is utilized.

3,828,701
INCINERATOR

Robert F. Atkin, San Jose, Calif., assignor to Pyrocom, Inc., Campbell, Calif.

Filed May 29, 1973, Ser. No. 364,898
Int. Cl. F23g 5/12
U.S. Cl. 110—8 A 5 Claims

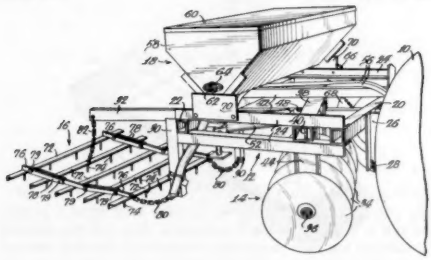


The present invention relates to a commercial or industrial type incinerator and more particularly to an incinerator which is capable of disposing of combustible waste containing a substantial percentage of plastic materials without creating attendant atmospheric pollutants.

3,828,702
RICE FARMING IMPLEMENT

David N. Bowman, Newport, Ark., assignor to Morris L. Bowman, Newport, Ark., a part interest

Filed May 16, 1972, Ser. No. 253,823
Int. Cl. A01c 5/00
U.S. Cl. 111—52 4 Claims



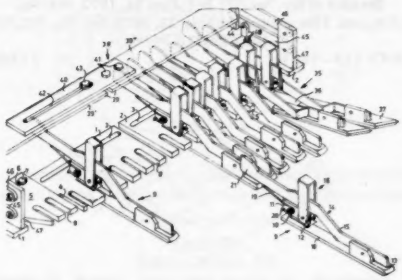
A farm implement particularly adapted for rice farming for increasing the productivity of rice fields by allowing the cultivation of land immediately adjacent the levees in a rice field. The implement includes a frame adapted to be connected to a tractor and mounts, from front to rear, a disc gang, a seeder and a harrow. The disc gang is arranged so that one end thereof is lower than the other end thereof to fill the furrows customarily generated during the formation of levees so as to allow seeding by the seeder and smoothing by the harrow, all in a single pass of the implement.

3,828,703
TEMPLATE

Wolfgang Sugland, Herford, Germany, assignor to Kochs Adler AG, Bielefeld, Germany

Filed Dec. 27, 1972, Ser. No. 318,841
Claims priority, application Germany, Dec. 27, 1971, 2164862
Int. Cl. D05b 21/00
U.S. Cl. 112—121.15 5 Claims

A template for use in controlled sewing devices for sewing pieces of material together along their edges. The template consists of essentially a base plate having a plurality of spaced slot-shaped clearances in which can be received a plurality of

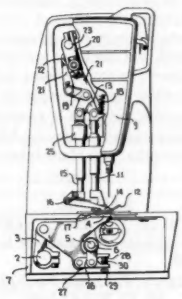


clamping means corresponding to the size and shape of the workpieces.

3,828,704
COMBINED UPPER AND LOWER FEED FOR SEWING MACHINES

Wolf-Rudiger Von Hagen, Grotzingen, and Hermann Gauch, Affalterbach, both of Germany, assignors to Union Special Maschinenfabrik, Stuttgart, Germany

Filed Feb. 15, 1973, Ser. No. 332,549
Claims priority, application Germany, Feb. 19, 1972, 2207897
Int. Cl. D05b 27/06
U.S. Cl. 112—212 11 Claims



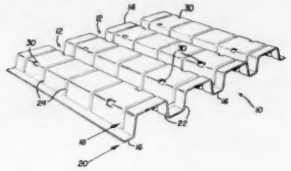
This disclosure relates to a feed mechanism for sewing machines wherein the upper feed assembly includes a pressure foot and a separate upper fabric slide which operates in conjunction with a lower fabric slide. The pressure foot is constantly resiliently urged towards the needle plate and the mounting means for the upper fabric side includes a spring and means for compressing the spring and tightly applying the upper fabric slide against fabric during the feeding movement thereof with the force required to compress the spring reacting against the means resiliently retaining the pressure foot in place so as to reduce the pressure exerted by the pressure foot during the feeding of fabric relative thereto while at the same time permitting the restoring of the pressure on the pressure foot during the retracting movement of the fabric slides. The lower fabric slide may also have incorporated therein a spring resiliently urging the same towards the pressure foot with the combined reactive forces of the fabric slides springs being less than that applied on the pressure foot.

3,828,705

METHOD OF MANUFACTURING A PALLET

James J. Morrison, Windsor, Ontario, Canada, assignor to Kasle Steel Corporation, Detroit, Mich.

Division of Ser. No. 317,261, Dec. 21, 1972, Pat. No. 3,776,146. This application June 22, 1973, Ser. No. 372,727
Int. Cl. B21d 28/06
U.S. Cl. 113—116 R 3 Claims



A one-piece pallet having parallel corrugations and parallel reinforcing ribs transverse to the corrugations. The tops of the corrugations define a load supporting surface and the bottoms of the corrugations define a pallet supporting surface parallel to and below the load supporting surface. The reinforcing ribs project below the load supporting surface and above the pallet supporting surface. Thus, the reinforcing ribs do not substantially reduce the area for supporting either the load or the pallet. Both support surfaces provide maximum contact area for better weight distribution.

The method includes forming the corrugations, by free flow within the forming portion of the die, and forming the ribs by drawing within the die. The drawing occurs after the corrugations are formed and as an uninterrupted continuation of the step of forming the corrugations. The entire operation may be done in a conventional blanking press.

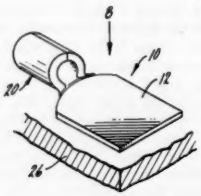
The method may be practiced to continuously make pallets from coil stock by feeding the coil stock and cutting the stock into a pallet blank which remains connected to the stock by an integral tab. The blank and stock are incrementally advanced to a work station where the corrugations and ribs are formed while the next succeeding blank is being cut. After incremental advancing, the connecting tab is removed from the first pallet while the corrugations and ribs are being formed in the second blank and while the third blank is being cut to size.

3,828,706

METHOD OF MAKING A TERMINAL

William J. Scott, Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Jan. 2, 1973, Ser. No. 320,489
Int. Cl. B21d 53/00
U.S. Cl. 113—119 7 Claims



An improved method of making a terminal connector, having a barrel at one end for mechanical deformation or crimping about a conductor and a snap spade blade at the other end that locks over threads of screws or studs.

3,828,707

BOAT BOW STEP

John P. Young, 4000 Via Vaquero Ave., Las Vegas, Nev. 89102

Filed Feb. 12, 1973, Ser. No. 331,784
Int. Cl. B63b 35/00
U.S. Cl. 114—.5 R 9 Claims

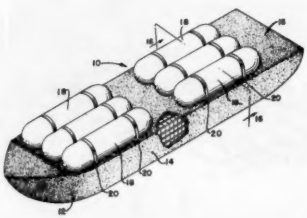
A device for providing a step on the bow of a boat comprises a flat upper step member, a lower stabilizing member having a notched cavity for engaging the bow of the boat and a support member attached to and extending between the upper and lower members.

3,828,708

MODULAR PRESTRESSED CONCRETE MARINE VESSELS AND METHOD OF MAKING SAME

Ben C. Gerwick, Jr., 500 Scansom St., San Francisco, Calif. 94111; William J. Talbot, Jr., 3601 Sarsalite Dr., Corono Del Mar, Calif. 94965; Keith E. Hughes, 2570 Qued Way, Laguna Beach, Calif. 92651, and Arnold L. Brown, Snowdon Ct., Walnut Creek, Calif. 92651

Filed Apr. 9, 1973, Ser. No. 349,405
Int. Cl. B63b 5/14, 5/18
U.S. Cl. 114—65 A 17 Claims



A preferred method of fabricating a prestressed concrete barge is disclosed in which the hull is constructed from a plurality of longitudinal modules. All modules, including the bulkhead modules, are cast in a horizontal plane as a full-transverse cross-sectional element with appropriate spaced openings. Then the modules, which have ducts extending therethrough and a gasket sealing one end of each duct, are rotated 90° to a normal, or vertical, orientation, post-tensioned in two complementary directions, and transported to an assembly site. Steel tendons are passed longitudinally through the ducts so that the modules can be lightly prestressed until the adjacent modules are in alignment. The joints defined by adjacent modules are then temporarily sealed by applying a putty-like cement or grout thereinto; an adhesive epoxy is subsequently pumped into the temporary joint to form a full-strength, long-lived, water-tight bond. The procedure is repeated until the hull has been completed, and then the entire hull is longitudinally prestressed by applying considerable force to the tendons. Grout is then pumped into the ducts and allowed to harden to maintain the tensioning forces of the tendons, which act in a third complementary direction. Storage tanks are then installed from the open ends of the assembled hull onto saddles located in the interior of the hull. Concrete plugs are then sealed in the openings of the

bulk-head modules. The bow and stern, which are cast as separate, doublecurved, non-prestressed concrete sections, are then joined to the modular hull. Lastly, the barge is launched and a plurality of tanks are secured to saddles on the deck.

The unique method outlined above, with minor variants, is applicable to the fabrication of concrete barges for transporting liquid petroleum gas (LPG), liquid natural gas (LNG), vinyl chloride and various cryogenic cargoes. Furthermore, such method may be utilized to fabricate diverse modular floating platforms well-suited for use as self-contained electrical power generating stations, waste treatment facilities, fish canneries, heliports, and the like.

3,828,709

LNG CARGO TANK INSULATION SYSTEM

Ragnar Bognaes, Jeloy, and Olav Solberg, Oslo, both of Norway, assignors to Kvaenner Brug AS, Oslo, Norway

Continuation-in-part of Ser. No. 81,101, Oct. 15, 1970, Pat. No. 3,680,323. This application July 28, 1972, Ser. No. 275,893The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.

Int. Cl. B63b *25/08*

U.S. Cl. 114—74 A **9 Claims**

In a marine vessel having a hull structure for transporting or storing a cargo tank adapted to contain liquified and/or compressed gas, the tank is supported within the hull in any convenient manner by a support structure, with the exterior surface of the tank substantially entirely covered by a thermal insulation material. The insulation material also covers a portion of the support structure and extends from the point of juncture of the support structure with the tank towards a termination point spaced from the hull. The insulation material covering the support structure is tapered from a maximum thickness adjacent the point of juncture of the support means with the tank to a minimum thickness at the termination point so as to create a controlled temperature gradient in the support structure thereby to minimize the thermal stresses in the tank at the point of juncture thereof with the support structure.

3,828,710

EXTENSIBLE STANCHION

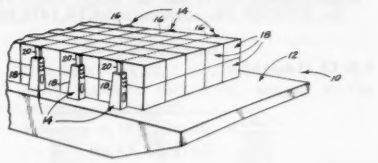
Henry Sause, Jr., 3829 N.E. Flanders, Portland, Oreg. 97232

Filed Aug. 18, 1972, Ser. No. 281,837

Int. Cl. B63b *25/28*

U.S. Cl. 114—75 **6 Claims**

A vertically extensible-contractible telescopic stanchion usable on a deck in a vessel such as a barge for holding a load. The stanchion includes a somewhat pyramidal base (for anchoring to a deck), and a pair of independently movable extension members mounted on the base. The base and extension members include generally upright planar load-support surfaces, all of which occupy a substantially common upright plane. Chains in the stanchion that are connected to the extension members are utilized to raise and lower these members, and also to lock them in different selected extended positions.



3,828,711

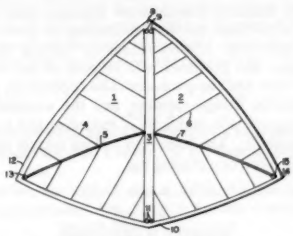
WING GENOA JIB

Charles W. Russell, 2005 Paul Spring Rd., Alexandria, Va. 22307

Filed July 27, 1972, Ser. No. 275,873

Int. Cl. B63h *9/04*

U.S. Cl. 114—103 **3 Claims**



A wing genoa jib for a sailboat has two identical halves joined along the luff and provided at the head with fittings for a halliard and fitted at the tack with a tack line, each half of the wing genoa jib having a sheet. When used as a genoa jib the luff is brought into engagement with the head stay, the tack secured, and the halliard hoisted while the clews of the two halves are joined to form a double layer genoa jib having its luff bearing on the head stay. When off the wind or when reaching, the tack is released and the sheets of the two halves of the genoa jib properly adjusted so that the jib opens to form either a running spinnaker or a reaching spinnaker.

3,828,712

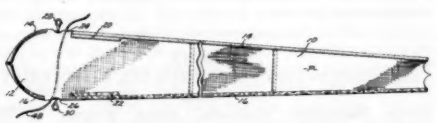
SAIL LAUNCHING DEVICE

Montague R. Mintey, 10580 Arnwood Rd., Lake View Terrace, Calif. 91342

Filed May 14, 1973, Ser. No. 360,395

Int. Cl. B63h *9/04*

U.S. Cl. 114—104 **6 Claims**



A sail launching device for initially-furled sails, such as a spinnaker or other sails. The device includes a panel which is initially encircled about the furled sail. The edges of the panel are provided with readily disengageable Velcro fasteners. When the panel is raised, the Velcro fasteners are disengaged by the pressure of the sail as the latter is unfurled.

3,828,713

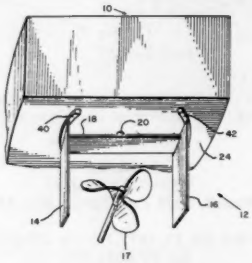
BOAT FLANKING RUDDER SYSTEM

Charles S. Duryea, 168 N. Bridge, Somerville, N.J. 08876

Continuation-in-part of Ser. No. 113,247, Feb. 8, 1971, Pat. No. 3,710,749. This application Oct. 19, 1972, Ser. No. 298,863

Int. Cl. B63b *25/06*

U.S. Cl. 114—163 **8 Claims**



A flanking rudder system for small, propeller driven boats including at least two transversely spaced rudder blades mounted in flanking positions on opposite sides of a boat propeller, with blade portions extending to pivot about the propeller, and single control means for varying the effective rudder angles and positions with respect to the longitudinal axis of the boat and the propeller. The rudders are connected by a transverse bridge member and the assembly may be dctachable to provide simplicity of mounting and permit blade interchangeability. The improved rudder system may also include a hydro-foil or a planing bar.

3,828,714

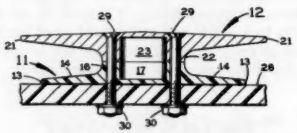
MARINE HARDWARE

Marvin S. Perkins, North Miami Beach, Fla., assignor to Perkins Marine Lamp and Hardware Corporation, Miami, Fla.

Filed June 16, 1971, Ser. No. 153,603

Int. Cl. B63b *21/08*

U.S. Cl. 114—218 **1 Claim**



A marine accessory device such as a cleat, bow light, ventilator, tank filler pipe or the like, consists of a pair of interconnected members one of which is formed of a relatively flexible polymeric resin such as a polycarbonate resin and the other is formed of a rigid metal. The device is mounted on a marine vessel by securing the polymeric resin member to a vessel surface.

3,828,715

AIR CUSHION TYPE FENDER FOR USE WITH A QUAY-WALL

Kazuo Matsushita, Hiratsuka, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

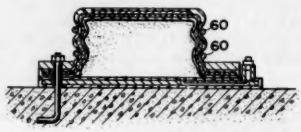
Filed Feb. 12, 1973, Ser. No. 331,566

Claims priority, application Japan, June 23, 1972, 47-74117

Int. Cl. B63b *51/02*; **E02b** *3/22*

U.S. Cl. 114—219 **8 Claims**

An air cushion type fender for use at a quay-wall is provided having a hat-shaped body made of a rubbery resilient material and a bottom plate adapted to seal and close the bottom opening of the hat-shaped body which is filled with pressurized air. The hat-shaped body has a flange extending outwardly from the edge of its bottom opening, permitting mounting on the quay-wall by anchor bolts. This fender provides excellent damping of the initial impact at the instant of first contact of a vessel moored parallel to or at an angle with the quay-wall, by slipping and restoring to its original shape.



3,828,716

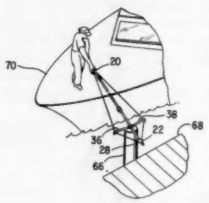
MOORING DEVICE

Robert P. Bernardi, Harrisburg, Pa., assignor to Bernardi Bros., Inc., Harrisburg, Pa.

Filed Sept. 13, 1973, Ser. No. 396,672

Int. Cl. B63b *21/00*

U.S. Cl. 114—221 R **7 Claims**



A mooring device includes an elongate mooring pole and a spreader assembly having a pair of spreader arms pivotally mounted on the mooring pole movable from an inoperative position lying along the mooring pole to an operative position extending away from the mooring pole, the spreader arms having channels formed in the ends thereof cooperating with a leg extending from a distal end of the mooring pole to define a three-point support for a mooring line forming a loop to be released to drop over a mooring.

3,828,717

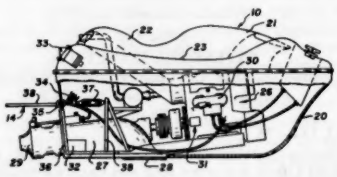
WATER SKIING APPARATUS

Ronald A. Nichols, No. 253-10202 149th St., Surrey, B. C., and George Rakuson, 4554-48B St., Delta, B. C., both of Canada

Filed July 2, 1973, Ser. No. 375,831

Int. Cl. A63c *11/10*

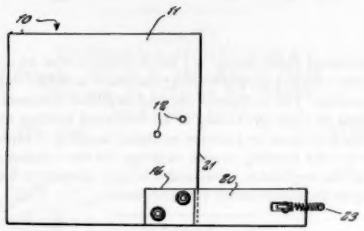
U.S. Cl. 115—6.1 **4 Claims**



Water skiing apparatus including a boat propelled by an engine and capable of being steered from a point remote from

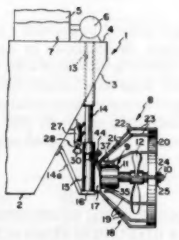
the vessel. A control float is connected to the boat by a line and the water skier uses a two-handed grip on separate handles attached to the float. One handle is fixed to the float and the other can be rotated through an arc and about a substantially horizontal axis. The movable handle is used to operate hydraulic means which actuates a steering nozzle on the boat. The fixed handle has a trigger-like control lever which opens and closes the engine throttle through operating means. Circuit means including two switches one on each handle enables the skier to start the motor as well as to bring it to a fast stop in an emergency.

3,828,718
AUXILIARY RUDDER
Ray L. Jolin, P.O. Box 146, Tracyton, Wash.
Filed June 27, 1972, Ser. No. 266,568
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 R **1 Claim**



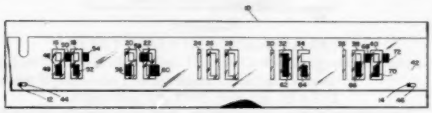
An auxiliary rudder that is attachable to any outboard motor so to serve as a steering device; the auxiliary rudder consisting of a flat steel plate to each opposite side of which an offset bracket is secured, a pair of shims between each bracket and the plate, each bracket extending beyond a side edge of the plate and supporting a tension coil spring therearound so to be securely fitted to the outboard motor.

3,828,719
HYDRAULIC PROPULSION UNIT
Clifford M. Cooke, P.O. Box 236, Thessalon, Ontario, Canada
Filed Apr. 3, 1972, Ser. No. 240,570
Int. Cl. B63h *1/14*
U.S. Cl. 115—35 **6 Claims**



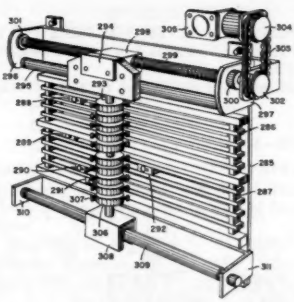
Hydraulic propulsion apparatus particularly adapted for use on a marine vessel such as a barge comprises a propeller and hydraulic driving motor mounted at one end of the vessel for vertical adjustment and rotary steering movements. The propeller is housed within a protective cage or shroud which normally extends below the level of the bottom of the vessel for engagement with the bottom of a shallow body of water whereupon the propeller may be adjusted vertically upwardly automatically. A preferably hydraulically operated steering mechanism is connected to the propeller assembly for imparting rotary steering movements to the latter, the mechanism permitting vertical adjustment of the propulsion apparatus.

3,828,720
DUAL PURPOSE DIAL MECHANISM
Richard J. Herst, Woodland Hills, Calif., assignor to Car Tapes, Inc., Chatsworth, Calif.
Filed Apr. 9, 1973, Ser. No. 348,967
Int. Cl. H03j *1/02*
U.S. Cl. 116—124.1 **7 Claims**



A dial and mask combination enables alternate selection of AM or FM broadcast frequencies. The movement of the mask is directly controlled by an FM-AM selector switch. Selecting the FM portion moves the mask to a first position, displaying a portion of the dial representing FM frequencies. Selecting the AM portion moves the mask to a second position, displaying a portion of the dial representing AM frequencies.

3,828,721
AUTOMATIC SPRAY-PAINTING MACHINE
Harry Szczepanski, 900 Clancy, N. E., Grand Rapids, Mich. 49503
Division of Ser. No. 79,012, Oct. 8, 1970, Pat. No. 3,716,022.
This application Feb. 7, 1973, Ser. No. 330,330
Int. Cl. B05c *5/00, 11/16*
U.S. Cl. 118—7 **4 Claims**

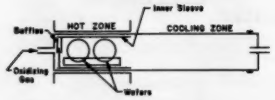


A conveyor extends into a spray station from an exterior loading station. At least one fixture for supporting a mask and work pieces is engageable with the conveyor for movement into the spray station. The conveyor preferably continues the movement on through the spray station, and out the opposite side, so that the enclosure forming the spray station can be shorter than the length of the fixture assembly in the direction of movement of the conveyor. Space under one side of the conveyor is utilized for mask-washing equipment. Lateral transfer means, together with an elevator system, moves the work support and mask from the conveyor to and through the washing station. A program controller determines the painting cycle according to easily preset adjustments, and spray gun assemblies can be lifted out and installed as a unit for each job set-up. A down-draft ventilation system in the work station accommodates the wide range of painting conditions the machine is capable of handling.

3,828,722
APPARATUS FOR PRODUCING ION-FREE INSULATING LAYERS

James L. Reuter, and Jagtar S. Sandhu, Fishkill, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Division of Ser. No. 33,701, May 1, 1970, Pat. No. 3,666,546.
This application Nov. 22, 1971, Ser. No. 200,821
Int. Cl. C23c *13/08*
U.S. Cl. 118—48 5 Claims

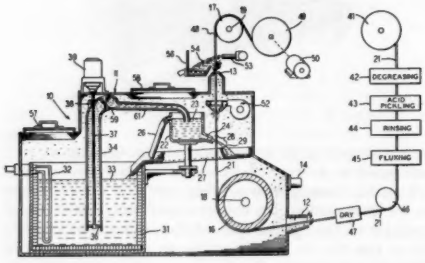


Ion contamination of insulators, such as thermally grown silicon dioxide layers on silicon wafers is virtually eliminated, if, after oxide growth, the wafers are cooled in an ion-free zone. A cylindrical, inner, quartz sleeve, preferably baffled, is interposed between the reaction tube and a wafer containing boat while a purging gas such as argon, nitrogen, helium and other inert gases is directed into the sleeve over the oxidized wafers to prevent contamination of the wafer by ions out-gassing from the walls of the reaction tube during the cooling cycle. Alternatively, the portion of the tube designated for wafer cooling is continuously baked before and during the oxide growth process and cooled simultaneously with the wafers thereby preventing the buildup of ions on the walls in the wafer cooling portion of the tube. Alternatively, a quartz sleeve is interposed between the wafer boat and reaction tube and extends from the hot zone and through the portion of the tube designated for wafer cooling. The inner sleeve is removed for wafer cooling.

3,828,723
GALVANIZING APPARATUS FOR WIRE AND THE LIKE

Joseph L. Herman, Pompano Beach, Fla., assignor to Emily Herman Thompson

Division of Ser. No. 360,556, May 17, 1973. This application July 23, 1973, Ser. No. 381,794
Int. Cl. B05c *5/00, 11/06, 11/16*
U.S. Cl. 118—63 5 Claims

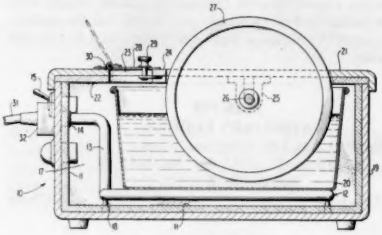


A method and apparatus for evenly and uniformly galvanizing wire, strip steel and the like. A descaled, dry wire or the like is passed vertically and upwardly through a transversely flowing stream of molten zinc without touching anything solid while the zinc and the wire are in an oxygen free atmosphere. The so coated wire is preferably quenched in a flowing water bath.

3,828,724
APPLICATOR APPARATUS FOR DEPILATORY COMPOSITION

Miklos Korodi, 925 E. 79th St., New York, N.Y. 10021

Filed Jan. 30, 1973, Ser. No. 327,928
Int. Cl. B05c *1/08*
U.S. Cl. 118—258 1 Claim

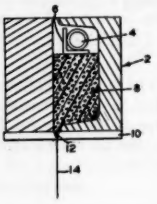


Sections of sheet plastic are hand-wiped across an applicator roller which is supported for rotation in a melted depilator composition. The container for said depilator composition is mounted in close proximity to an electrical heating element near the bottom of an exterior insulated housing. A removable cover for the housing carries bearings for the rotational support of the applicator roller and a hinged closure to facilitate adding to the composition when necessary.

3,828,725
CURTAIN COATER WITH RESTRICTED FLOW

Walter J. Lewicki, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Sept. 29, 1970, Ser. No. 76,427
Int. Cl. B05c *5/00*
U.S. Cl. 118—324 3 Claims



Curtain coaters are utilized to provide a curtain of coating material through which an object to be coated passes. The coater head cavity herein is provided with means to restrict the flow of material from the curtain coater and thereby prevent the flooding of a slow moving article which is meant to be coated with a controlled, relatively thin layer of material. The means restricting the flow may be an open-celled material or a group of nested spheres.

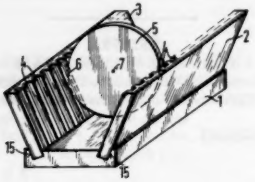
3,828,726
FIXTURE FOR POSITIONING SEMICONDUCTOR DISCS IN A DIFFUSION FURNACE

Wolfgang Dietze, Munich; Konrad Reuschel, Groebenzell, and Hans Stut, Vaterstetten, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 12, 1972, Ser. No. 261,944
Claims priority, application Germany, July 7, 1971, 2133843
Int. Cl. B05c *11/14*
U.S. Cl. 118—500 7 Claims

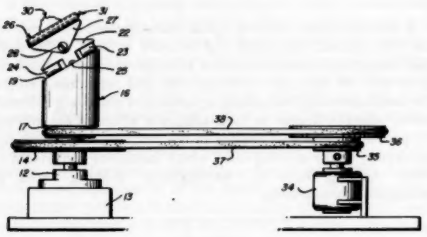
A fixture for positioning semiconductor discs in a diffusion furnace for diffusing doping material therein including a

trough-shaped holder having sidewalls composed of a semiconductor material, the sidewalls having opposed grooves therein proportioned to receive individual semiconductor



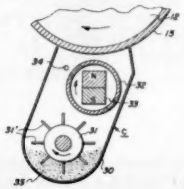
discs therein, the sidewalls being positioned to engage the peripheries of said discs along limited areas of contact which lie approximately at the horizontal plane including the center of gravity of the discs.

3,828,727
OMNI ANGLE ROTARY TABLE
John F. Bauerle, 208 S.W. St., Mansfield, Ill. 61854
Filed Apr. 23, 1973, Ser. No. 353,302
Int. Cl. B05c *11/12*
U.S. Cl. 118—500 **11 Claims**



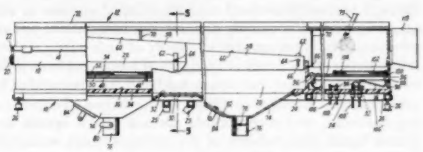
An omni angle rotary table having a cam cylinder with an angularly disposed cam surface on its end, and a shaft which is axially and rotatably disposed with respect to the cam cylinder. A platform assembly is pivotally affixed to the end of the shaft and supports cam means which slidably engage with the cam surface on the cam cylinder, so that the platform assembly is caused to rotate and to pivot back and forth as the shaft and/or cam cylinder is rotated.

3,828,728
XEROGRAPHIC DEVELOPMENT SYSTEM
Frank Y. Yang, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 11, 1971, Ser. No. 197,874
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **9 Claims**



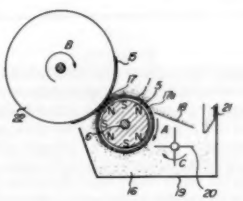
An apparatus for maintaining a substantially uniform distribution of toner particles within the developer flow in a latent electrostatic image development system in which an electrically conductive member positioned adjacent the flow path of the developer material is connected to a source of electrical potential and biased to a polarity opposite from the polarity on the toner particles in the developer flow. The electrically conductive member is moved in a direction generally transverse to the direction of developer flow. Toner particles are attracted to the conductive member from developer material in portions of the developer flow having greater quantities of toner particles dispersed therein and as the conductive member is transported across the developer flow, toner particles are attracted from the conductive member to portions of the developer flow having lesser quantities of toner particles dispersed therein.

3,828,729
ELECTROSTATIC FLUIDIZED BED
William C. Goodridge, West Haven, Conn., assignor to Electrostatic Equipment Corporation, Stratford, Conn.
Filed May 18, 1972, Ser. No. 254,472
Int. Cl. G03g *13/00*
U.S. Cl. 118—634 **23 Claims**



Objects are coated in electrostatic fluidized or fluidic bed apparatus which includes a mechanical barrier effectively interposed between the cloud of charged particles and the travel path for objects conveyed therethrough. The barrier means includes an upstanding baffle having an edge portion configured to expose different vertical portions of the object as it is conveyed thereby. Generally, at the beginning of the travel path the lower portions of the objects will be masked by the baffle so as to promote deposition of the particles upon the upper surfaces initially. As it proceeds along the travel path, progressive exposure of the lower portions of the object will permit the complete and uniform coating thereof.

3,828,730
ELECTROSTATIC RECORD DEVELOPING APPARATUS
Keitarou Yamashita, Saitama-ken, and Shogo Tanaka, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Filed May 16, 1972, Ser. No. 253,900
Claims priority, application Japan, May 21, 1971, 46-40598; Aug. 11, 1971, 46-71359
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **4 Claims**



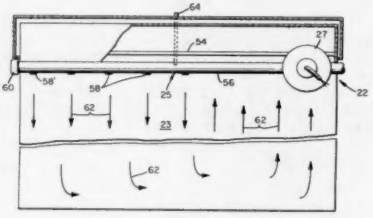
A cylindrical permanent magnet having an odd number of axially extending magnetic poles on the surface thereof is

disposed coaxially within a hollow rotary cylinder of non-magnetic material. The cylindrical permanent magnet is fixed in such a position that one of the magnetic poles of one polarity adjacent to a pair of the magnetic poles of the other and same polarity is disposed opposite to the image carrying surface of an electrostatic recording sheet, and a powdery developer attracted to the surface of the hollow rotary cylinder under rotation passes beneath the image carrying surface of the recording sheet and then over the magnetic poles of the other and same polarity. The powdery developer attracted to the surface of the hollow rotary cylinder forms a magnetic brush on such surface for developing a latent electrostatic image recorded on the image carrying surface of the recording sheet.

3,828,731
ANIMAL LITTER
Percy LaVerne White, Arthur, Ontario, Canada
Filed Apr. 3, 1972, Ser. No. 240,828
Claims priority, application Canada, Mar. 6, 1972, 136334
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **11 Claims**

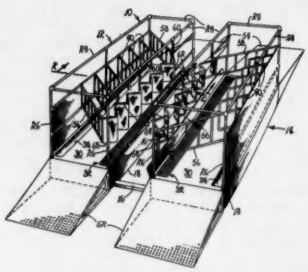
A litter or bedding for animals, particularly for domestic pets, and a method for making same is disclosed. The litter is biodegradable in water and soil environments and is flushable through normal household sanitary disposal systems in which aqueous medium it quickly decomposes to minimize pollution products. The litter consists primarily of high purity alphacellulose paper stock fibres in the form of pieces cut from a sheet of such material and into which has been incorporated at least one microbial inhibitor to inhibit the formation of odour-causing bacterial, and may include surface active agents to increase liquid absorbability of the cellulose stock material, as well as including a chlorophyll-containing compound. Minor amounts and up to 50 percent of sulphite cellulose paper stock may be combined with the alpha-cellulose material.

3,828,732
REVERSE FLOW FLUSHING APPARATUS FOR ANIMAL HOUSING SYSTEMS
Robert Hill, 150 Rolino Way, Los Gatos, Calif. 95050; George D. Bliss, 852 Southhampton Dr., Palo Altos, Calif. 94303, and Janos B. Szakacs, 535 Everett Ave., Palo Altos, Calif. 90058
Filed June 12, 1972, Ser. No. 261,824
Int. Cl. A01k *01/00*
U.S. Cl. 119—22 **11 Claims**



A self-cleaning cage system which includes a combination of features. Reverse flow flushing apparatus may be fed via an integral tubular frame assembly, which thus doubles as a water delivery system and a support means for the cages. A readily tiltable drain system is contemplated integral with the reverse flow flushing apparatus, to provide a water drain system which allows draining the waste water from the left or the right side of the cage. The invention combination contemplates removal of animal or bird excreta by releasing a large volume of water of relatively low pressure into the flush pan of a cage. The flush pan bottom has a relatively shallow slope to thus allow a deep build-up of water introduced at the low side of the slope. The resulting build-up of water floats the excreta from the flush pan rather than forcing it off via high pressure jets of water. The water input and drain systems are disposed at the same side (the low side) of the flush pan.

3,828,733
PORTABLE MILKING STALL
Manuel G. Correia, 13075 Ave. 200, Tulare, Calif. 93274
Filed May 15, 1972, Ser. No. 253,408
Int. Cl. A01j *05/00*
U.S. Cl. 119—14.03 **3 Claims**



A pre-fabricated milking stand characterized by a pair of laterally spaced, elongated and elevated milking stalls, each stall being supported by skids for accommodating its displacement into an operative environment, and restraining means for simultaneously restraining a plurality of obliquely oriented cows, whereby access to their udders is afforded for milking purposes. A particular feature of the invention resides in the portability of the milking stand which facilitates conversion of "flat" milking barns to "herringbone" milking barns, at minimal economic costs.

3,828,734
ANIMAL COLLAR OR HARNESS AND LEASH WITH QUICK CONNECTOR
Welbourne D. McGahee, Melbourne, Fla., assignor to Loop A Liner, Inc., Melbourne, Fla.
Filed Jan. 2, 1974, Ser. No. 430,323
Int. Cl. A01k *27/00*
U.S. Cl. 119—109 **10 Claims**

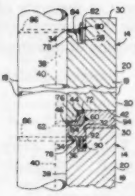
Animal collar or harness and leash having a quick connector therebetween including a stud on the collar for receiving an elongated eye member with retaining ring of sufficient length to mate with a bend between a central shaft extending centrally through an oval horizontal eye member having a pair of upstanding members connected to the short sides of the

oval horizontal eye member. The pair of upstanding members is provided with a lower bend that connects to a swivel element with an eye that receives an animal leash. In a modification the order of the connector elements are reversed.

3,828,735
BOILER TUBE SHIELDING WALL

Robert G. Graham, Farmington, and Douglas J. Frame, St. Clair Shores, both of Mich., assignors to C & H Combustion Co., Birmingham, Mich.

Filed Jan. 15, 1973, Ser. No. 323,872
Int. Cl. F23m *9/10*
U.S. Cl. 122—6 A **56 Claims**

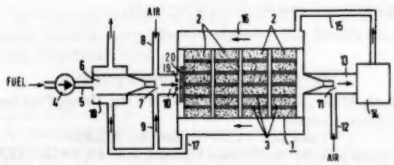


A shielding or insulating wall of discrete tiles is removably secured in front of the impingement surfaces of boiler tubes in the burner region of the boiler furnace chamber for shielding the lower regions of the boiler tubes against excessive heating in order to force combustion gases to rise into the superheat and reheat regions of the boiler to develop and maintain required higher temperatures in such latter regions, or to protect the boiler tubes from direct impingement of burner flames which tend to generate and accelerate their premature deterioration. The shielding wall of tile is free-floating with the expansion and contraction of the boiler tubes, whose load and temperature variation in the burner region of the furnace area normally results in cracking and decay of a fixed continuous shielding wall material as currently practiced.

3,828,736
METHOD AND APPARATUS FOR OPERATING COMBUSTION ENGINES

Christian Koch, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 18, 1972, Ser. No. 218,696
Claims priority, application Germany, Jan. 22, 1971, 2103008
Int. Cl. F02m *25/06*
U.S. Cl. 123—3 **14 Claims**

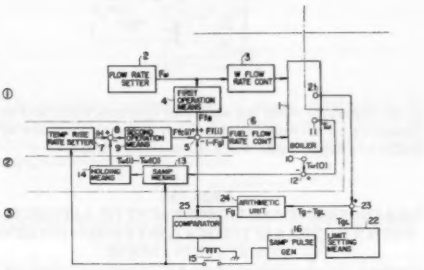


Method and apparatus for the combustion of a fuel, free of detrimental substances, in a combustion engine. The fuel, together with oxygen containing gas, is passed over a catalyst for conversion into a gas mixture of methane and carbon monoxide. Passing the gas mixture together with additional oxygen containing gas to the combustion engine whereat the gas mixture is burned producing an exhaust gas. Feeding part of the exhaust gas to the fuel, prior to the conversion of the fuel.

3,828,737
CONTROL SYSTEM FOR ONCE-THROUGH BOILERS

Masaru Fujii; Syuji Oyagi; Tutomu Kamei, and Inosuke Mori, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1973, Ser. No. 384,839
Claims priority, application Japan, Aug. 4, 1972, 47-78207
Int. Cl. F22b *35/14*
U.S. Cl. 122—406 ST **8 Claims**



The control system controls the fuel flow rate, during starting of a once-through boiler, and includes detectors measuring the feed water temperature at the outlet of a water-cooled furnace wall and the gas temperature at the outlet of the furnace. The system includes further detectors detecting abnormal conditions with respect to the feed water temperature and the gas temperature, and setting means for setting the final desired temperature of the feed water during starting and the temperature of the feed water during full operation. The control is effected by pulses from a pulse generating circuit operable to generate a starting pulse, control pulses having a predetermined duration and predetermined intervals, and holding pulses having a phase and timing equal to those of the control pulses. A setting point generating circuit is selectively switched into a follow-up mode in which there is no starting pulse and a setting point equal to the actual temperature of the feed water at the outlet of the water-cooled furnace wall is generated, a temperature rise mode in which the start pulse is generated and the holding pulses are generated, and the setting temperature is varied during predetermined time intervals in accordance with a generated temperature change rate, and a holding mode in which the setting temperature is held at a constant level.

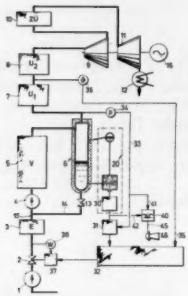
3,828,738
FEED WATER CONTROL IN FORCED CIRCULATION STEAM GENERATORS

Paul Frei, Lindau/Schweiz, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed May 9, 1973, Ser. No. 358,828
Claims priority, application Switzerland, May 16, 1972, 215/72
Int. Cl. F22d *5/00*
U.S. Cl. 122—504.2 **3 Claims**

The forced circulation steam generator is provided with a means for measuring the difference in pressure between two levels in the water separator in order to measure the water

level in the separator. The water feed rate to the evaporator is controlled in dependence on the measured pressure difference



in the separator when the separator contains water and in dependence on another variable, such as the temperature at the outlet of a superheater, when the separator is dry.

3,828,739

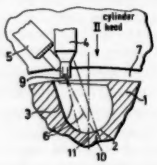
ARRANGEMENT AND EMBODIMENT OF A SPARK PLUG WITH A DIESEL RECIPROCATORY PISTON INTERNAL COMBUSTION ENGINE

Gerhard Finsterwalder, Porz-Eil, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed Sept. 30, 1971, Ser. No. 185,159

Int. Cl. F02b *3/02*

U.S. Cl. 123—32 R **14 Claims**



A reciprocatory piston internal combustion Diesel engine, which incudes a spark plug which when viewing in the direction of the combustion air flowing at the end of the compression stroke into the combustion chamber provided in the piston is located behind a fuel jet but outside the direct sphere of influence of the fuel jet, while the spark path of said spark plug is located within the region of the piston gap as it exists at the start of the fuel injection, the spark path being protected against air flow by housing means having a maximum of four windows totaling a maximum of half the cicumference of said housing means.

3,828,740

ROTARY INTERNAL COMBUSTION ENGINE AND METHOD OF COOLING THE SAME

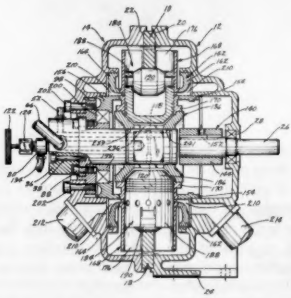
Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 286,189, Sept. 5, 1972, Continuation-in-part of Ser. No. 301,096, Oct. 26, 1972. This application Apr. 16, 1973, Ser. No. 351,606

Int. Cl. F02b *57/00*

U.S. Cl. 123—44 E **9 Claims**

A rotary internal combustion engine is disclosed and generally comprises a rotor means which is rotatably mounted on a stationary core mounted in an engine frame. The rotor means has a plurality of cylinders spaced radially thereon. A free floating piston is slidably mounted in each of the cylinders with the heads of the pistons being positioned towards the center of the rotor. A roller is mounted in the skirt end of the piston which rides against a circular cam. The centrifugal force created by the rotation of the rotor causes the pistons to follow the internal cam surface of the cam during rotation. The inner end of the core is provided with fuel and air ports adapted to communicate with the cylinders as the rotor rotates with respect to the core. An air passageway is formed in the core and is in communication with the air port and an air pump to provide a supply of air for purging, cooling and charging the cylinders. A fuel passageway is provided in the core and is in communication with the fuel ports and a supply of fuel to supply fuel under pressure to the fuel ports. An adjustable needle valve is provided in the fuel passageway to permit the precise adjustment or metering of the fuel being the cam being shaped so that the compression is increased as the piston approaches its position of maximum compression. The



cam is shaped to provide a dwell adjacent the area of maximum compression to permit the piston to be maintained at the position of partial expansion to permit complete combustion of the fuel-air mixture to increase combustion efficiency. The cylinders are exhausted by means of openings extending around the cylinder. The exhaust from each cylinder is exhausted through its individual exhaust openings with the exhaust in the cylinder being purged by the air being supplied thereto from the air pump. The air also permits the cylinders to be recharged and forces the pistons radially outwardly into engagement with the cam. The air also cools the inside surface of the cylinder. The preferred embodiment includes an even number of cylinders, ordinarily two or four with a cam plate having a pair of oppositely disposed lobes. The preferred cam plate is designed to condense the compression stroke and the expansion stroke into a shorter period of time so that less heat is lost to the walls of the cylinder therefore requiring less cooling. The shortened compression and expansion time also permits additional time for the cooling cycle.

3,828,741

INTERNAL COMBUSTION ENGINE

Antonio Bixier, 266 Geoffroy St., Pont Viau, Laval, Province of Quebec, Canada

Filed Jan. 11, 1973, Ser. No. 322,826

Claims priority, application Canada, Jan. 13, 1972, 132392

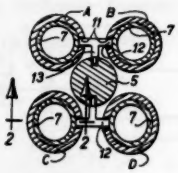
Int. Cl. F02b *75/26*

U.S. Cl. 123—58 AB **3 Claims**

An internal combustion engine in which the usual crankshaft is replaced by a grooved drum connected to the pistons by rigid links passing through a slot into the lateral wall of each cylinder and into which engine the cylinders are closed at both ends and form a combustion chamber at each end of each piston. The rigid links couple the pistons in pairs to prevent rotation of the pistons on themselves while producing rotation of the grooved drum by converting the rectilinear

movement of the pistons into rotary movement of the drive shaft of the engine.

A preferred embodiment defines a two-stroke engine having a novel intake system formed by each piston including an in-



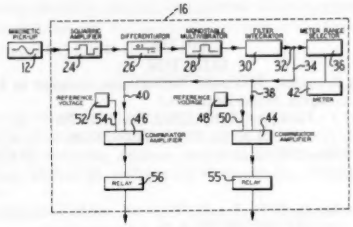
ternal cavity, an intake member transversely projecting into the internal cavity of each piston dividing the same into two intake chambers, and with check valves and channels associated with each intake chamber.

3,828,742

ENGINE CONTROL SYSTEM

Roger R. Weis, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 26, 1972, Ser. No. 247,651
Int. Cl. F02p *11/00*
U.S. Cl. 123—102 **4 Claims**



A control system for monitoring and controlling an engine as a function of engine speed is provided. The control system includes a control device which continuously monitors engine speed sensed through a magnetic pickup means and causes engine shutdown by means of an engine shutdown device when an overspeed condition occurs. In addition, the control device actuates a warning device when an underspeed condition occurs.

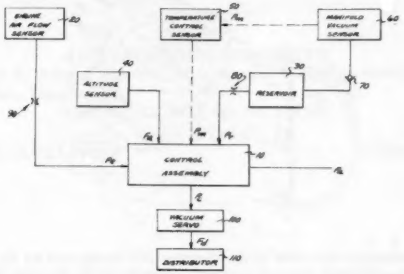
3,828,743

ALTITUDE COMPENSATED VACUUM AMPLIFIER

George Ludwig, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 2, 1973, Ser. No. 329,288
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 A **12 Claims**

A mechanical device is located between the carburetor spark port and distributor breaker plate servo the device being fed by vacuum reservoir. The device provides a modulated vacuum control signal to the distributor breaker plate servo which is a function of spark port vacuum and the vehicle's altitudinal location by means of a pressure sensitive valving means operatively connected to an aneroid. The vacuum reservoir is charged by connection with the intake manifold, and a temperature responsive member may be added so that the vacuum control signal will be responsive to manifold pressure when the engine is subject to predetermined adverse temperature conditions. By placing a restriction means betweeen the reservoir and the mechanical device gradual changes in spark advance settings is accomplished during light vehicle accelerations, and upon rapid recovery of subsequent momenta-



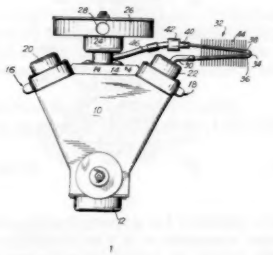
ry decelerations; during times of heavy acceleration the vacuum control signal is vented to atmosphere through the valving means, thereby quickly lowering the spark advance setting to avoid engine detonation.

3,828,744

INTERNAL COMBUSTION ENGINE CRANK CASE OIL VAPOR CONDENSING MEANS

Jesse R. Hollins, 40 Stoner Ave., Great Neck, N.Y. 11521

Filed Apr. 19, 1973, Ser. No. 352,699
Int. Cl. F02m *25/06*; **F02f** *9/00*
U.S. Cl. 123—119 B **1 Claim**



A motor vehicle having an internal combustion engine which includes a fuel-air intake manifold and an oil crank case. Means is provided for transferring emissions from the oil crank case to the fuel/air intake manifold and while so transferring the emissions cooling the same. Some of the oil vapors in the emissions, as a result of being cooled, condense and form oil driblets which are accumulated and returned to the oil crank case.

3,828,745

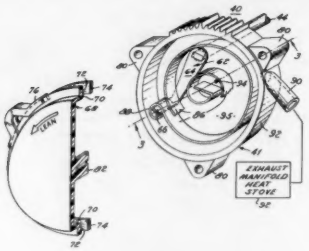
AUTOMATIC CHOKE CONTROL FOR ENGINES

John D. Medrick, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1972, Ser. No. 317,888
Int. Cl. F02m *1/10*
U.S. Cl. 123—119 F **8 Claims**

An automatic choke control for a carburetor of an internal combustion engine having a loosely coiled bi-metallic thermostatic spring generally centered in a cylindrical housing means. One end of the spring is anchored in the housing means and the other end is operatively connected with a movable choke valve pivotally mounted in the air-fuel induction passage of a carburetor. Means are provided for passing a stream of heated

air over the thermostatic spring and this means includes an air induction passage in the cylindrical housing means extending generally tangentially with respect to the housing and with



respect to the coils of the thermostatic spring and an air exhaust passage located generally centrally of the housing. This structure forms a vortex of heated air in heat transfer relationship to the thermostatic spring.

3,828,746

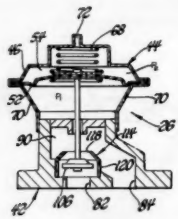
METERING EXHAUST GAS RECIRCULATION APPARATUS AND SYSTEM

David L. De Martelaere, Southfield, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,168

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **16 Claims**



A valve assembly has a spring-loaded pressure responsive diaphragm connected to a stem carrying a valve which is moveable to any of several general operating positions; a chamber in the housing of the valve assembly is exposed to the comparatively low pressure of the interior of the intake manifold of an associated internal combustion engine while the moveable valve is effective for opening and closing an associated port leading to the chamber but operatively connected to a source of exhaust gas of the associated internal combustion engine as, for example, the engine exhaust manifold or, as is often employed, the exhaust cross-over conduit which, generally, physically extends or passes over the associated engine.

3,828,747

AUTOMOTIVE AIR-FUEL MIXTURE HEATING SYSTEM

Shyuya Nambu, Yokohama City, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

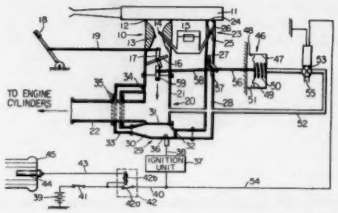
Filed Dec. 14, 1972, Ser. No. 315,000

Claims priority, application Japan, Dec. 24, 1971, 46-1393

Int. Cl. F02m *25/06, 31/02;* **F02n** *17/04*

U.S. Cl. 123—122 AB **27 Claims**

For the purpose of reducing toxic combustible compounds remaining in exhaust gases from an automotive internal combustion engine which usually demands an enriched air-fuel mixture during cold driving, a combustion chamber is positioned in contact with an interior of a mixture supply passage for the engine so as to positively heat the mixture passing through the mixture supply passage when the engine is being driven cold, whereby the vapourization of the air-fuel mixture



in the mixture supply passage is promoted and even distribution of the mixture to individual engine cylinders is achieved. The hot exhaust gases produced in the combustion chamber may be recirculated into the mixture supply passage to contribute to further heating of the mixture therein.

3,828,748

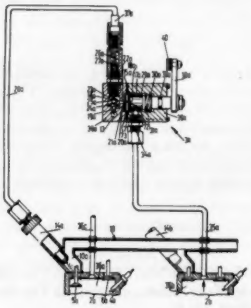
INJECTOR

Bernard Breukink, Enschede, Netherlands, assignor to Holec N. V., Hengelo, Netherlands

Filed Apr. 3, 1972, Ser. No. 240,470

Int. Cl. F02m *39/00;* **F02b** *33/04*

U.S. Cl. 123—139 AJ **19 Claims**

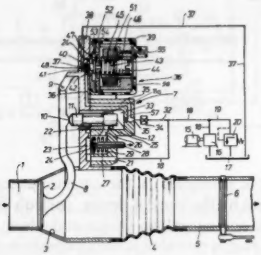


Injector for delivering fuel to at least one fuel inlet of a combustion engine, the pump chamber of at least one fuel pump communicating via an inlet valve with a fuel supply and via an exhaust valve with a fuel discharge to be connected to the fuel inlet of the combustion engine and said pump chamber being adjoined by at least one membrane, wherein a motor chamber for driving the fuel pump comprises a connection for connecting said motor chamber to a space of the combustion engine, said space having a pressure fluctuating per combustion cycle of the combustion engine is constructed more simple and compact and with a greater durability in that one and the same membrane adjoins at its one side the pump chamber and at its other side the motor chamber.

3,828,749
FUEL INJECTION APPARATUS

Heinrich Knapp, Leonberg-Silberberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed July 5, 1972, Ser. No. 269,175
Claims priority, application Germany, July 5, 1971, 2133434
Int. Cl. F02m *39/00*; F02b *3/00*
U.S. Cl. 123—139 E **6 Claims**

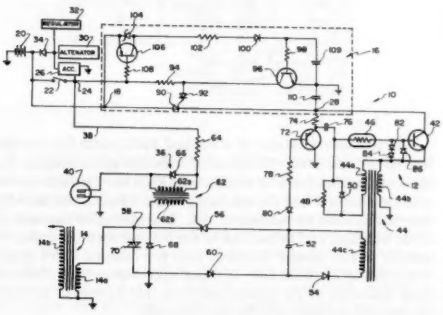


In a fuel injection apparatus in which an air sensor deflected as a function of the intake air quantities maintains the air-to-fuel ratio at a constant value and wherein the return force affecting the air sensor and opposing the deflecting force of the air flow is derived from pressurized liquid, the pressure of said liquid is varied by altering, in response to the oxygen content of the exhaust gas, the energizing current of a solenoid forming part of a pressure control valve.

3,828,750
OVERVOLTAGE AND ELECTRONIC RELAY CIRCUIT FOR CAPACITOR DISCHARGE IGNITION SYSTEMS

Gunter G. Schuette, Addison, and William J. Warner, Schaumburg, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 1,597, Jan. 9, 1970, abandoned. This application Oct. 28, 1971, Ser. No. 193,601
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 OCD **12 Claims**

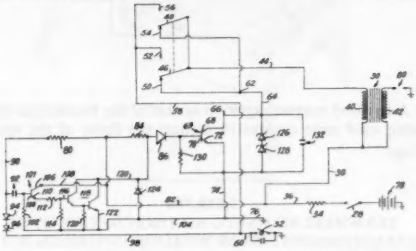


An energy pulsing circuit is provided for applying energy pulses to an ignition coil in synchronization with external switching means such as the breaker-points of an automobile. A power switching circuit is connected between the energy pulsing circuit and an external power source to apply operating potential to the ignition system involved under normal voltage conditions, and to automatically disconnect power to the ignition system upon sensing abnormal voltage conditions. A voltage abnormality sensing circuit is provided to render the power switching circuit non-conductive in response either to an overvoltage applied to the circuit or to a reduced residual feedback voltage which may occur at the ignition switch upon opening the switch when the engine is running.

3,828,751
ELECTRONIC IGNITION SYSTEM

Guy E. Adams, Monroe, N.Y., assignor to Solitron Devices, Inc., Tappan, N.Y.

Filed Aug. 11, 1972, Ser. No. 279,994
Int. Cl. F02p *3/02*
U.S. Cl. 123—148 E **7 Claims**

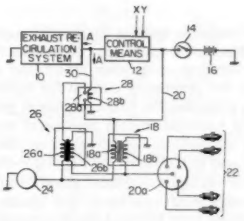


A solid state control unit for switching a device having means to smooth a control signal and protect the unit from transitory voltages and means to permit bypass of said control unit.

3,828,752
IGNITION SYSTEM FOR AN AUTOMOTIVE ENGINE HAVING EXHAUST RECIRCULATION ARRANGEMENT

Kazuo Hioki, and Michio Onoda, both of Yokohama, Japan, assignors to Nisson Motor Company, Limited, Yokohama, Japan

Filed Nov. 28, 1972, Ser. No. 310,102
Claims priority, application Japan, Nov. 29, 1971, 46-96060
Int. Cl. F02p *3/02*
U.S. Cl. 123—148 DS **3 Claims**



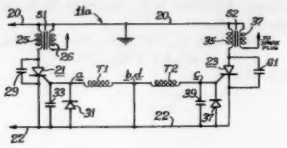
An improved ignition system is herein proposed for use specifically in combination with an automotive engine having an exhaust recirculation system which is adapted to have the exhaust gases recirculated from the engine exhaust system to the engine during predetermined conditions in which toxic nitrogen oxides are produced in the engine in relatively great quantities. the ignition system uses an additional high-tension current generator connected between an ignition power source and an ignition distributor in parallel with a usual high-tension current generator. An electrical circuit arrangement including these two high-tension generators is adapted to fire the air-fuel mixture in the engine with usual energy when the exhaust recirculation system is inoperative and with intensified energy in response to a condition in which the recirculation system is operative.

3,828,753

FLYWHEEL MAGNETO IGNITION SYSTEM

K. Narashimha Reddy, Beloit, Wis., assignor to Fairbanks Morse Inc., New York, N.Y.

Continuation of Ser. No. 83,363, Oct. 23, 1970, abandoned.
This application Feb. 21, 1973, Ser. No. 334,395
Int. Cl. F02p 1/00
U.S. Cl. 123—148 R 3 Claims



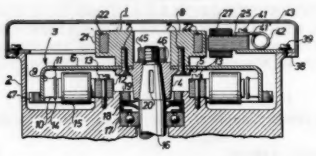
A flywheel magneto ignition system of the breakerless type using solid state devices to control the firing of the spark plugs.

3,828,754

FLYWHEEL MAGNETO IGNITION DEVICE WITH CAPACITOR-THYRISTOR IGNITION COMBINED WITH GENERATOR

Hans Thorsten Henrik Carlsson, Amal, Sweden, assignor to Aktiebolaget Svenska Elektromagneter, Amal, Sweden

Filed Aug. 30, 1972, Ser. No. 284,737
Claims priority, application Sweden, Sept. 1, 1971, 11081/71
Int. Cl. F02p 3/06
U.S. Cl. 123—149 D 5 Claims



A flywheel magneto ignition device with capacitor-thyristor ignition combined with generator comprises a first component group for producing an ignition effect and a second component group for generating current for lighting and/or battery charging purposes, the first component group comprising a rotor having mounted therein permanent magnets the pole of which are arranged to coact with coils containing at least one coil core and intended for the capacitor-thyristor-ignition circuit, and the second component group comprising a system of coils provided with iron cores and fixedly mounted in a rotating magnetic field from a body corotating with the rotor in the first component group, the rotor and the corotating body being mechanically connected together but with the respective magnetic fields shielded from each other.

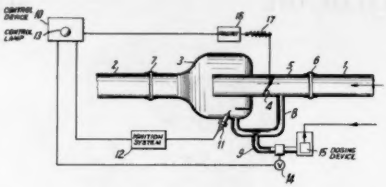
3,828,755

AUXILIARY STARTER FOR DIESEL ENGINES

Hartmut Glatzel, Stuttgart, and Herbert Langen, Altbach, both of Germany, assignors to J. Eberspacher, Esslingen/Neckar, Germany

Filed July 31, 1972, Ser. No. 276,856
Claims priority, application Austria, Aug. 2, 1971, 6730/71
Int. Cl. F02n 17/02; F02p 21/02; F02m 31/06
U.S. Cl. 123—179 H 5 Claims

An auxiliary starter, for diesel engines having combustion chambers connected to an intake air pipe through which combustion air, heated directly by a fuel burning device, is supplied to the combustion chambers, comprises an annular combustion chamber on the intake air pipe. A flap-type throttle valve is mounted in tee air intake pipe in advance of the combustion chamber, and may be closed by a magnet through a spring, the magnet being controlled by a control device. A bypass is connected into the intake air pipe upstream of the flap valve and is connected to the combustion chamber. A valve, controlled by the control device, controls flow of fuel into the bypass, and an ignition device in the form of a spark plug or a glow plug is provided in the combustion chamber to ignite the fuel air mixture. Preferably, the bypass opens tangentially into the combustion chamber. The flap valve is so arranged that the air necessary for combustion is controlled automatically in dependence on the underpressure.

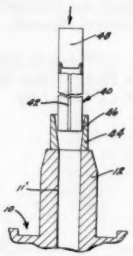


3,828,756

METHOD AND APPARATUS FOR REBUILDING VALVE GUIDES

Donald J. Kammeraad, 4563, Venessa Ave., and James A. Kammeraad, Rt. 2, both of Holland, Mich. 49423

Continuation of Ser. No. 847,927, Aug. 6, 1969, abandoned.
This application Dec. 30, 1971, Ser. No. 214,261
Int. Cl. F01l 3/08; B23p 7/00
U.S. Cl. 123—188 GC 4 Claims



This disclosure relates to a method and system for rebuilding valve guides for internal combustion engines wherein the old worn guides are first reamed and then have slitted tubular members forced into the reamed guides. The tubular member inserts can then be reamed to size. The operation can also include knurling and broaching of the tubular members after insertion of the tubular member into the reamed valve guide. The tubular member has an outer diameter greater than the inner diameter of the reamed guide so that a press fit between the tubular member and the guide results.

3,828,757

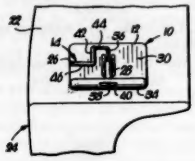
SPRING BIASED ARROW RESTS

Robert L. Finlay, 325 Garfield St., Emporia, Kans. 66801

Filed Nov. 15, 1972, Ser. No. 306,696
Int. Cl. F41b 5/00
U.S. Cl. 124—41 7 Claims

An arrow rest is provided to be suitably attached, as by the use of pressure-sensitive adhesive, to an archery bow and in-

cludes a swingable arrow support and an adjustable support-positioning mechanism which cooperate together to support and selectively locate the arrow a predetermined distance from the side of the bow; the support and adjustable positioning mechanism further serve to cushion or dampen the inherent side thrust of the arrow upon its release from the bowstring. The positioning mechanism has a single yieldable element in the form of a compression spring which serves the



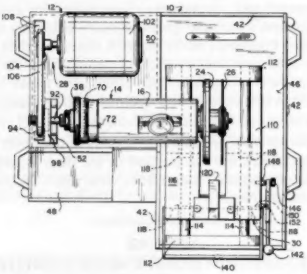
dual purpose of continuously urging the support in the direction of its arrow-supporting position prior to the release of the arrow and, by virtue of its interconnection with the support, to cushion the side thrust of the arrow after its release and during the time that the arrow is traversing the support while at the same time permitting the support to yield so as not to impede or alter the flight of the arrow as the fletching or other stabilizing structure of the arrow passes by the support.

3,828,758

MACHINE FOR PRODUCING THIN SECTION SPECIMENS

Paul O. Cary, 423 E. Mayfield Dr., Grand Junction, Colo. 81501

Filed Sept. 27, 1972, Ser. No. 292,847
Int. Cl. B28d *1/04*
U.S. Cl. 125—13 R **11 Claims**



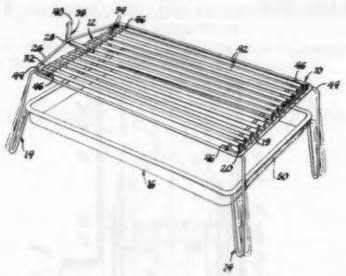
A versatile apparatus for both cutting and grinding, lapping and polishing solid material to produce thin section specimens for analysis and quality control is disclosed herein and includes a support base upon which a quill assembly is mounted. The quill assembly is provided for imparting longitudinal movement to a power-driven rotationally movable spindle, grinding wheel, and cutting wheel, the latter two being connected with the spindle for rotational movement therewith. In this regard, the apparatus includes a differential screw and annular micrometer dial for effecting accurate longitudinal adjustment of the spindle. A sliding cross-plate is also mounted on the aforestated support base and is designed to be manually moved both toward and away from the grinding and cutting wheels. A specimen holder removably mounted on the sliding cross plate is designed to bring a pair of spaced apart specimens into contacting engagement with the wheels whereby one of the specimens will be in contacting engagement with a corresponding one of said wheels when the cross plate is moved toward the latter.

3,828,759

PORTABLE BARBECUE ASSEMBLY

George F. Cooper, 215 W. Fifth Ave., Flint, Mich. 48503

Filed Jan. 3, 1972, Ser. No. 214,692
Int. Cl. F24c *1/16*; **F24b** *3/00*; **A47j** *37/07*
U.S. Cl. 126—9 R **8 Claims**



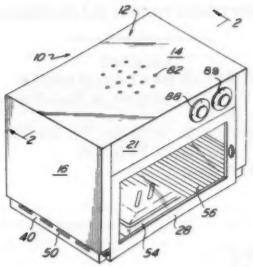
A portable barbecue assembly wherein a frame is supported by frame supports that fold in alignment with the frame and also provide support for a fuel tray. The frame pivotally supports a grill which can be moved to an open position permitting access to the fuel tray. The grill has a plurality of prongs in which are positioned removable metallic sleeves. When folded, the unit can be stored in the fuel tray.

3,828,760

OVEN

Milton H. Farber, Bronxville, and Irving R. Belinkoff, Queens Village, both of N.Y., assignors to LCA Corporation, Yonkers, N.Y.

Filed May 23, 1973, Ser. No. 363,293
Int. Cl. A21b *1/00*
U.S. Cl. 126—21 A **20 Claims**



A broiling, cooking, roasting, and baking oven, which may be used for defrosting as well, is disclosed wherein heated air in the upper portion of a cooking chamber moves downwardly in a cyclonic turbulent pattern, then meets at a vortex in the center bottom portion of the chamber, and then is moved upwardly while maintaining its cyclonic form. The cooking chamber is insulated from a motor chamber by means of an intermediate insulation chamber and through which air may or may not flow.

3,828,761

SPACE HEATER CONSTRUCTION PARTICULARLY FOR MOTOR VEHICLES

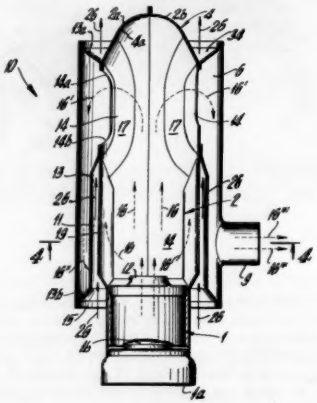
Wolfgang Rich, Esslingen/Neckar, Germany, assignor to J. Eberspacher, Esslingen/Neckar, Germany

Filed Feb. 16, 1973, Ser. No. 333,362

Claims priority, application Germany, Mar. 14, 1972, 2212173

Int. Cl. F24c 3/00

U.S. Cl. 126—90 R 4 Claims



A space heater particularly for vehicles comprising an inner tubular wall defining a combustion chamber for the generation of heating gases having an inner closed end and a side wall with opposite heating gas flow openings. An outer tubular member surrounds the inner tubular member and has a heating air inlet surrounding said combustion chamber and an opposite end adjacent the end of the inner tubular member for the discharge of the heating air. The heating gas flow openings are a tear drop configuration and the heating gases flow from the combustion chamber is axially within the inner tubular member, out through the openings, and then rearwardly in reverse flow over the heating air flow in a flow passage between the outer tubular member and an outside casing.

3,828,762

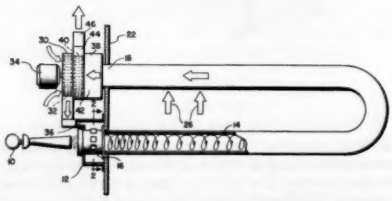
TUBULAR HEAT EXCHANGER

Ozbek Duzey, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 21, 1972, Ser. No. 290,902

Int. Cl. F24c 3/00

U.S. Cl. 126—91 A 2 Claims



A heat exchanger, especially useful for warm air furnaces alone or in combination with air-conditioning apparatus, in which a flame is directed into the end of an elongated tube, the hot products of combustion flowing into the tube and being vented from the opposite end. Novel features include a push-pull, forced draft blower arrangement combined with positive pressure, tangential air entry to the heat exchanger tube in order to control the combustion rate and promote heat flux in said tube.

3,828,763

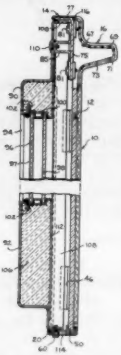
OVEN DOOR CONSTRUCTION WITH FRONT GLASS PANEL

Arthur C. Wilson, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 14, 1973, Ser. No. 360,042

Int. Cl. F24c 15/04

U.S. Cl. 126—200 9 Claims



A windowed door construction for use as an insulated oven door for an electric or gas domestic oven. The door has a large front glass panel and a metal inner door liner with a small window opening and a multiple glazed window assembly and thermal insulation combined in the door. A sheet metal decorative trim frame encircles the front glass panel along the bottom edge and up the two opposite sides of the glass panel. An inner support strip is attached to the decorative trim frame for engaging the adjacent edges of the front glass panel. An elongated handle assembly joins the free ends of the inner support strip and comprises the top portion of the door construction. All fastening screws are hidden from view when the oven door is in its closed position.

3,828,764

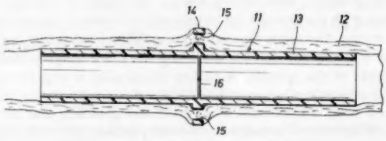
NON-MIGRATING REVERSIBLE MAKE STERILIZATION COUPLER

Len M. Jones, Houston, Tex., assignor to Well-Saver, Inc., Houston, Tex.

Filed Jan. 22, 1973, Ser. No. 325,233

Int. Cl. A61b 19/00

U.S. Cl. 128—1 R 2 Claims



A coupler and method for connecting the severed ends of a vas deferens having particular application and use in perform-

ing reversible male sterilization which generally includes an elongated tubular member having the ends thereof dimensioned for insertion into the ends of the vas to be connected. The tubular member also has at least one annular flange intermediate its ends, and with said flange being susceptible to the passage of a micro-surgical needle through selected portions thereof and accommodate suturing and tissue growth therethrough, whereby one or both of the ends of the v may be sutured to said annular flange to prevent migration of the coupler in the vas. In certain embodiments, the periphery of the tubular member may be provided with two spaced annular flanges such that one end of the severed vas may be sutured to one of said flanges, and the other end of the severed vas sutured to the other flange. In certain instances, the tubular member may be provided with a transverse wall blocking the passageway therethrough, so as to prevent fluid flow through the vas. This particular embodiment of the coupler has application in performing a reversible male sterilization such that subsequently the transverse wall may be surgically removed to restore fertility.

3,828,765

GENITOURINARY TEST INSTRUMENT

Bernard McDonald, Malibu, Calif., assignor to Medical Testing Systems, Inc., Beverly Hills, Calif.

Filed Nov. 24, 1971, Ser. No. 201,777
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **7 Claims**

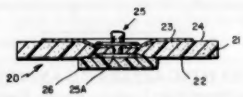
An inexpensive instrument for collection of genitourinary secretions, particularly for detection of gonorrhea in females is provided in practice of this invention. The elongated instrument has a head at one end for collection of samples from the cervical canal, and the other end has a head for sample collection within the urethra. In a preferred embodiment each head has a crescent-like cross section with an enlarged region on the convex side which tends to compress the wall of a body passage in which the head is inserted. A recessed region on the concave side exerts a decreased lateral pressure on the side of the passage. As the instrument is rotated within a passage the alternating increased and decreased pressures tend to "milk" various glands and ducts to induce and collect secretions.

3,828,766

DISPOSABLE MEDICAL ELECTRODE

David L. Krasnow, Canton, Mass., assignor to Jet Medical Products Inc., Braintree, Mass.

Filed Aug. 14, 1972, Ser. No. 280,350
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 E **11 Claims**



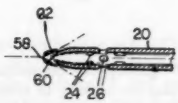
A disposable medical electrode comprising a support member made of a closed cell plastic material having an adhesive surface. A centrally located contact element is embedded therein so as to leave an exposed portion thereof at the adhesive side of the support member. A smaller pad member made up of an open cell plastic material is adhered to the adhesive surface of the support member at a position opposite to and in contact with the exposed portion of the contact element. In use, the pad member has a conductive gel dispersed throughout so that when the electrode is placed against the skin of a patient a good conductive path is present from the skin through the gelled pad to the contact element.

3,828,767

ANGIOGRAPHIC AND ARTERIOGRAPHIC CATHERTERS

Carl M. Spiroff, Granite City, Ill., assignor to Joseph A. Fenton, Jr., St. Louis County, Mo., a part interest

Filed Oct. 29, 1973, Ser. No. 410,629
Int. Cl. A61m *25/00, 31/00*
U.S. Cl. 128—2.05 **13 Claims**



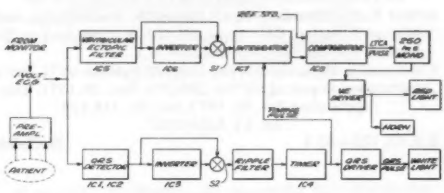
An angiographic catheter through which material passes toward a tapered tip and which includes several series of discharge holes arranged in axially spaced radial planes, the total cross sectional area of the holes in each of said planes decreasing as the planes are placed closer to the tip, and which also includes a discharge chamber immediately adjacent the tip, there being a set of proximal holes also aligned in a radial plane and leading backwardly away from the chamber and a small end hole in the tip which also leads to the chamber, all of the holes being formed by punching them from the inside of the catheter outwardly.

3,828,768

METHOD AND APPARATUS FOR DETECTING CARDIAC ARRHYTHMIAS

David W. Douglas, Columbia, Mo., assignor to Physiological Electronics Corporation, San Marino, Calif.

Filed July 13, 1972, Ser. No. 271,373
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **21 Claims**



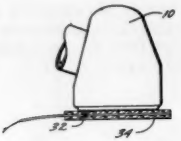
A continuous electrical wave representing the electrical action of a patient's heart is produced (the ECG wave). Frequency components of the ECG wave that lie predominantly below the frequency range of the normal QRS complex are sensed, these frequency components being typically in the range of about two Hertz to about eight Hertz. These frequency components are integrated upon the occurrence of a QRS complex, and the magnitude of the result is then compared to a reference standard. If the magnitude of the integral exceeds the reference standard an output signal indicative of a cardiac arrhythmia is then produced.

3,828,769

METHOD AND APPARATUS FOR ULTRASONIC TREATMENT OF LOWER TISSUES SIMULTANEOUS WITH HEATING OF SUBCUTANEOUS, OUTER MUSCLE AND LOWER TISSUES

Hal C. Mettler, 16621 Carousel Ln., Huntington Beach, Calif. 91103

Filed Feb. 28, 1973, Ser. No. 336,783
Int. Cl. A61h 1/00
U.S. Cl. 128—24 A 24 Claims



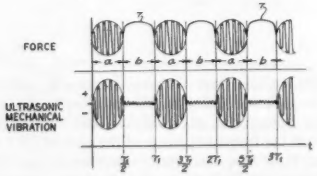
An ultrasonic frequency electro-mechanical therapeutic method and apparatus for treating an afflicted member, having skin, subcutaneous outer muscle and lower tissues, of a patient's body, the lower tissues including muscle, nerve, bone or joint tissues. A therapeutic applicator has an electrically energizable crystal for generating a mechanical energy wave and has a first pair of substantially parallel sides spaced apart a distance determinative of a first resonant frequency and a second side normal to the first pair of sides determinative of a second resonant frequency of at least 150 kHz selected for heating the lower tissues of a patient's body. The applicator includes a metallic electrode on each of the pair of sides, a housing in which the crystal is mounted and protective coating covering at least one of the pair of sides and forming an applicator side facing out of the housing. An ultrasonic energy generating circuit is coupled across the metallic electrodes and generates across the crystal an ultrasonic electrical signal and thereby a mechanical vibratory energy wave in the crystal, both having at least one frequency component equal to the second resonant frequency. Means generates heat adjacent the applicator side simultaneously with the mechanical vibratory energy and in the subcutaneous and outer muscle tissues of a patient's body in the afflicted member. The heat is sufficient to cause a heat rise in the subcutaneous and outer muscle in a range of 1 C to 24 C.

3,828,770

ULTRASONIC METHOD FOR CLEANING TEETH

Arthur Kuris, Riverdale; Lewis Balamuth, Southampton, and Manuel Karatjas, Glen Oaks, all of N.Y., assignors to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 119,298, Feb. 26, 1971, and a continuation-in-part of Ser. No. 209,971, Dec. 20, 1971. This application Dec. 26, 1972, Ser. No. 318,428
Int. Cl. A61h 7/00
U.S. Cl. 128—62 A 20 Claims



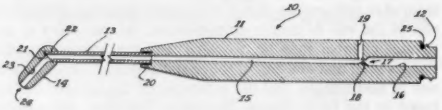
A method for cleaning teeth by providing bursts of ultrasonic mechanical vibration at an applicator repeated at a sonic frequency to produce both ultrasonic and sonic vibratory motion and effect during use of said applicator.

3,828,771

ORAL HYGIENE DEVICE

William Joseph Gartner, Bartlett, Ill., assignor to Gartner Research & Development Co., Bartlett, Ill.

Filed Nov. 10, 1972, Ser. No. 305,296
Int. Cl. A61h 9/00
U.S. Cl. 128—66 11 Claims



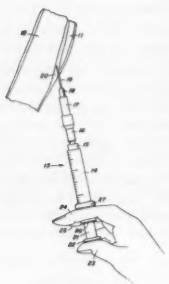
A bubble-containing water jet is provided in order that oral tissues may withstand a more rapid moving jet so that a non-pulsating jet of water can be more effectively utilized to provide cleansing of teeth and stimulation of oral tissue. The bubbles are produced by passing the water constituting the jet through a Venturi section of a tube which is vented in the low pressure section so that air is drawn into the water which is forced through the tube providing innumerable tiny bubbles in the water jet which issues from the outlet of the tube.

3,828,772

METHOD OF FUSING BONES

Geraldine H. Thiele, Rt. 1, Box 12, Windber, Pa. 15963

Filed Aug. 25, 1972, Ser. No. 283,663The portion of the term of this patent subsequent to June 26, 1990, has been disclaimed.
Int. Cl. A61f 5/00
U.S. Cl. 128—92 G 17 Claims



Bones can be fused together by injecting a liquefied composition containing a non-necrotic vascular sclerosing agent into the interface region between the bones. Normally a cast or brace is not used. The preferred non-necrotic vascular sclerosing agent is sodium oleate. Splints and diffused splints can be prepared using the bone fusing technique.

3,828,773

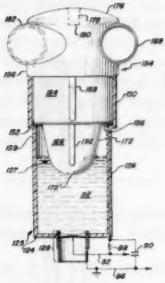
NEBULIZING APPARATUS AND SYSTEM

Roman Buch, Mundelein; Louis L. Kocsis, Elmhurst, and Max S. Sadove, River Forest, all of Ill., assignors to Theratron Corporation, Wheeling, Ill.

Filed Sept. 22, 1972, Ser. No. 291,232
Int. Cl. A61h 1/00
U.S. Cl. 128—194 17 Claims

An ultrasonic nebulizing apparatus and system including a pzt crystal, supported in a container adapted to support a nebulization cup at a position spaced from the transducer; the container also adapted to contain a fluid coupling column. An

oscillator, when energized causes the crystal to oscillate at its ultrasonic mechanical resonant frequency, the oscillator being designed to oscillate at a frequency governed by the mechanical resonant frequency of the crystal. The system includes a



safety circuit associated with the oscillator and including the container, the cup and the coupling column, which is effective to deenergize the system in the absence of operational conditions within the system.

3,828,774

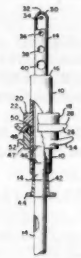
ADJUSTABLE RECTAL APPLICATOR WITH DRAINING SLEEVE

Alexander A. Vass, 309 E. 87 St., New York, N.Y. 10028

Filed Nov. 27, 1972, Ser. No. 309,668

Int. Cl. A61m *3/00*

U.S. Cl. 128—241 **10 Claims**



An adjustable rectal applicator in which an applicator tube is reciprocable within a sleeve for adjusting its discharge end within the rectum. The sleeve fits closely within the anal canal and is provided on its exterior with a surrounding enlargement that is engageable against a perianal surface to seal the anal opening. Means are provided for maintaining the applicator tube in adjusted position within the sleeve and also to seal the distal end of the sleeve bore. In one form, the applicator tube is formed with longitudinally spaced openings at its discharge end portion. In another form, a nozzle having a soft, resiliently flexible head section and a coupling section is secured to the applicator tube adapted to close the proximal end of the sleeve, and permitting the drainage of the rectum through the sleeve, when in non-closing position through an opening formed in the distal portion of the sleeve.

3,828,775

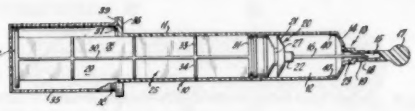
SELF-PACKAGED HYPODERMIC SYRINGE

Jack Armel, New York, N.Y., assignor to Iso Nuclear Corp., Ballston Spa, N.Y.

Continuation of Ser. No. 797,095, Feb. 6, 1969, abandoned. This application June 28, 1971, Ser. No. 157,744

Int. Cl. A61m *05/32*

U.S. Cl. 128—218 N **8 Claims**



The invention contemplates a self-packaged hypodermic syringe wherein the body of the syringe is itself an important part of the package. Removable end seals complete the packaged article and respectively provide actuating access to the plunger at the rear end, and to the needle at the forward end. As long as the syringe is stored, the needle is in a retracted position, protected against mechanical abuse or contact; upon plunger actuation, the needle is displaced to its forwardly projected position, in readiness for use. In the preferred forms which are described, the syringe body and the seal or closure structures are of a suitable plastic, shaped for localized frangibility when exposed to gamma irradiation of such dosage as to achieve sterility of the entire contents of the sealed structure.

3,828,776

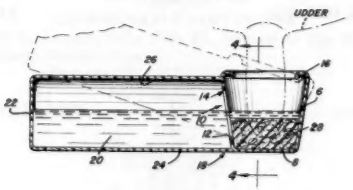
TEAT DISINFECTING CUP FOR USE AFTER MILKING

Anders V. Sparr, Sr., Rt. 1, Box 272 Milligan Rd., Waupun, Wis. 53963

Continuation-in-part of Ser. No. 233,111, March 9, 1972, abandoned. This application Apr. 9, 1973, Ser. No. 350,132

Int. Cl. A61m *7/00*

U.S. Cl. 128—248 **2 Claims**



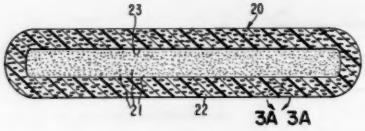
A manually applicable and removable teat disinfecting device expressly adapted for use after milking a cow comprising a hollow cylindrical handle closed at one end and open at its opposite end and provided with an integral coordinating teat dipping cup. One side wall of the cup is provided with a restricted but suitable inlet-outlet opening registering with the open end of the handle. The hollow portion of the handle provides a reservoir in which the antisepticizing solution is stored and from which it is poured by tilting and angling the handle. The upper open mouth of the cup is provided with an endless overhanging flange which constitutes an anti-splashing and protecting guard for the user. The device is self-standing when set aside and not in use and the cup is equipped with an optionally usable hanger hook which can be releasably hooked over the user's belt for out-of-use convenience.

3,828,777

MICROPOROUS OCULAR DEVICE

Richard A. Ness, Fergus Falls, Minn., assignor to Alza Corporation, Palo Alto, Calif.

Filed Nov. 8, 1971, Ser. No. 196,642The portion of the term of this patent subsequent to Nov. 9, 1988, has been disclaimed.
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 9 Claims



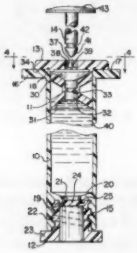
An ocular device for the controlled and continuous administration of a predetermined dosage of drug to the eye comprising a body of microporous drug release rate controlling material which is insoluble in tear fluid, the pores of which are filled with a medium permeable to the passage of drug by diffusion. The body contains a reservoir of drug formulation confined therein which is of limited solubility in the medium, and is of a shape which is adapted for insertion and retention in the sac of the eye bounded by the surfaces of the bulbar conjunctiva of the sclera of the eyeball and the palpebral conjunctiva of the lid. The body continuously meters the flow of a therapeutically effective amount of drug to the eye and surrounding tissues at a controlled and reproducible rate over a prolonged period of time. The device is so constructed that the metering is determined by the rate of diffusion of drug in the diffusive medium.

3,828,778

DISPOSABLE OINTMENT APPLICATOR

Martin Weinhart, Lincolnwood, Ill., assignor to Master Molded Products Corporation, Skokie, Ill.

Filed Jan. 22, 1973, Ser. No. 325,858
Int. Cl. A61m *35/00*
U.S. Cl. 128—261 2 Claims



An ointment applicator for use by doctors and by women and which is designed for a single use, after which it is discarded for sanitary reasons. The applicator is molded from a suitable plastic material, such as polyethylene, or polypropylene, or polyvinyl chloride, and made in a plurality of parts which are finally assembled when the applicator is to be used. One part is precharged with a prescribed dosage of a medication or ointment which may be discharged into a body cavity when the several parts are finally assembled for use.

3,828,779

FLEX-O-JET

Robert Water Ogle, Newport Beach, Calif., assignor to IMS Limited, Wilmington, Del.

Filed Dec. 13, 1972, Ser. No. 314,705
Int. Cl. A61j *5/00*; A61m *5/32*
U.S. Cl. 128—272 2 Claims

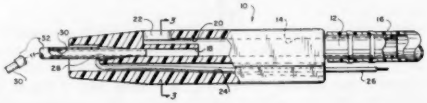
A device for the introduction of liquid medication into a flexible bag for the administration of intravenous solutions. The device comprises an elongated generally cylindrical hollow tubular member having an open end and a closed end, a boss extending from the closed end, carried by the boss a cannula having a sharpened outer end, and a rigid sheath surrounding the cannula and carried by the boss. The sheath serves to limit the advancement of the cannula into an orifice having a diameter greater than that of said cannula. A thrust portion is provided within the tubular member and a fluid passage extends longitudinally through the center of the thrust portion. The lower end of the fluid passage communicates with the upper end of the cannula. A cylindrical vial having a resilient stopper in its open end seals on the inside walls of the vial. There are threads on the thrust portion and cooperating threads on the stopper adapted to be interlocked, whereby the plug can be interlocked with the thrust portion.

3,828,780

COMBINED ELECTROCOAGULATOR-SUCTION INSTRUMENT

Charles F. Morrison, Jr., Boulder, Colo., assignor to Valleylab, Inc., Boulder, Colo.

Filed Mar. 26, 1973, Ser. No. 344,872
Int. Cl. A61m *1/00*; A61b *17/40*
U.S. Cl. 128—275.1 4 Claims



A combined electrocoagulator-suction instrument useful for coagulating bleeding capillaries and veins within a surgical field and for sucking out blood and other liquids from the field either during, before or after the coagulation procedure. An elongate body of electrically non-conductive material is formed with a main flow passage terminating at one end of the body in a nipple for connecting the passage to a vacuum source. A second passage through the body receives an electrical conductor connected to an electro-surgical generator, the end of the conductor passing through the second passage and having its bared end bent back to extend into the interior of the first passage. An open ended metal tube has one end formed to be inserted into the main passage at the end op-

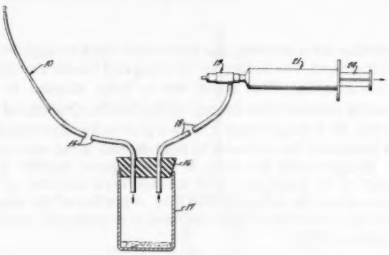
posite to said nipple, the tube being mechanically seated within the passage in electrical contact with the bared wire end. An electrically non-conductive sheath surrounds all of the exposed surface of the tube with the exception of a short section at the opposite end or tip. A branch passage extends through the wall of the body to communicate with the main passage at a location intermediate the ends of the main passage, the opposite end of the branch passage opening at the exterior of the body at a vent opening which can be fully or partially covered by the surgeon's finger to regulate the degree of suction within the main flow passage. The vent opening is offset from the location at which the branch passage communicates with the main passage in an upstream direction with respect to the direction of flow of fluid through the main passage.

3,828,781

METHOD FOR WITHDRAWING MENSTRUAL FLUID

Evelyn Lorraine Rothman, 2460 E. Balfour Ave., Fullerton, Calif. 92631

Filed Dec. 6, 1971, Ser. No. 205,144
Int. Cl. A61m *1/00*
U.S. Cl. 128—278 **6 Claims**



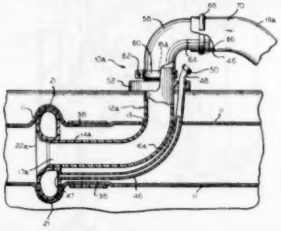
A method and apparatus whereby substantially all of the menstrual fluid incident to a normal monthly "period" may be removed in a small fraction of an hour. A simple plastic syringe is employed in combination with a valve to create a suction pump incapable of injecting air into the uterus. Such pump and an associated receptacle are connected to a semirigid plastic cannula having an outer diameter of about 4 mm, and such cannula is inserted through the undilated cervix. The cannula fits snugly into the cervical lumen so that the applied suction draws fluid out of the uterus. The menstrual extraction procedure is performed at the time when the normal monthly period starts, or is estimated to start.

3,828,782

TEMPORARY COLOSTOMY TUBE

Stanton G. Polin, 2848 Fargo Ave., Chicago, Ill. 60645

Filed Apr. 10, 1972, Ser. No. 242,624
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **22 Claims**



A temporary colostomy tube for inserting through an incision in the colon and including an open ended excrement tube having an inflatible balloon at one end thereof. A retainer means secures the opposite end of the tube on the outside of the body, which prevents the tube from moving further inward in the colon. A band is positioned around the colon adjacent the balloon. The balloon is inflated to occupy the entire lumen and is slightly larger in circumference than the band. The cooperation of the band with the balloon blocks the tube from moving toward the incisions. The cooperation of the retainer means and the band with the balloon prevents the fecal stream from seeping around the balloon and tube. A disposal bag is secured to the tube on the outside of the body for receiving the fecal matter.

3,828,783

ABSORBENT FACING MATERIAL

John Wilson Kennette, Somerville, and Irving Stanley Ness, Princeton, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed May 24, 1973, Ser. No. 363,459
Int. Cl. A41b *13/02*; **A61f** *13/16*
U.S. Cl. 128—284 **6 Claims**

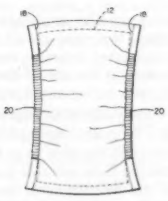
An absorbent facing material comprising 10 to 30 percent cellulosic, staple length, textile fibers, 60 to 80 percent of fluff wood pulp, and 5 to 25 percent of a resin binder material. The cellulosic fibers are substantially only on one surface of the material and the wood pulp substantially only on the opposite surface. The binder is distributed in a predetermined pattern with the surface containing the cellulosic fibers having a higher concentration of binder than the surface containing the wood pulp fibers.

3,828,784

CONFORMABLE BABY DIAPER

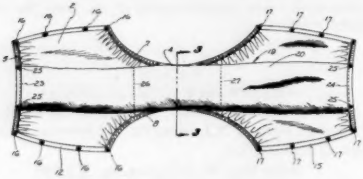
Richard L. Zoephel, Lake Villa, Ill., assignor to The Kendall Company, Napole, Mass.

Filed Aug. 21, 1972, Ser. No. 282,117
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **6 Claims**



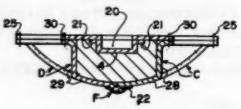
A diaper is micropleated along a portion or all of its borders to shape the diaper for better conformability when applied to an infant and provide extensibility along at least the side portions to provide a fit for various leg sizes and reduce the likelihood of leakage between the legs and the encircling diaper portion.

3,828,785
LINER FOR INCONTINENT PANTS
Paul B. Gamm, Cincinnati, Ohio, and Billy C. Clare, California, Ky., assignors to Jung Products, Inc., Cincinnati, Ohio
Filed July 17, 1972, Ser. No. 272,434
Int. Cl. A61f 13/16
U.S. Cl. 128—288 2 Claims



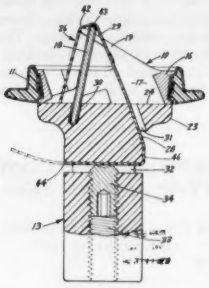
A removable and washable liner for incontinent pants in the form of an essentially seamless flattened tubular sleeve formed from a porous hydrophobic knitted fabric enclosing one or more layers of an hydrophilic material, the hydrophobic sleeve acting as a barrier to prevent discharged body fluids absorbed by the enclosed hydrophilic material from wicking into contact with the wearer's body on its inner surface and with the enclosing pants on its outer surface, yet the liner, due to the porosity and tubular construction of the sleeve, being readily washable and free from obstructions which would retain or inhibit the removal of absorbed fluids during washing.

3,828,786
SANITARY NAPKIN
Joyce P. Cervantes, 9815 C St., Oakland, Calif. 94603
Filed May 21, 1973, Ser. No. 362,413
Int. Cl. A61f 13/16
U.S. Cl. 128—290 R 2 Claims



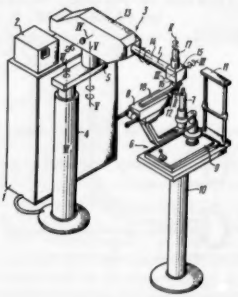
My sanitary napkin has a filler of sponge rubber which is enclosed in a cover whose top piece covers the top of the filler and which has an elongated opening that registers with an elongated recess formed in the top of the filler. The bottom piece of the cover, which is treated with a waterproofing agent, is in two halves and the inner edges of these two halves overlap each other. The outer edges of both of the top and bottom pieces are stitched together so as to enclose the filler. A special liner covers the floor and side walls of the elongated recess in the top of the filler and this liner has tabs that are sewn to the undersurface of the top piece. The ends of the cover extend beyond the ends of the filler and are provided with snaps for attachment to a sanitary belt. The cover ends have transversely extending slots disposed near the ends of the filler and when the sanitary napkin is worn with panties, the outermost cover ends are looped back on themselves and inserted through the slots so as to underlie the napkin, and the snaps nearest the filler are used to attach the napkin to the panties.

3,828,787
COLLET FOR HOLDING HEART VALVE
Lawrence Anderson, and Bruce D. Bentzen, both of Minneapolis, Minn., assignors to Medical Incorporated, Minneapolis, Minn.
Filed Sept. 8, 1972, Ser. No. 287,420
Int. Cl. A61b 17/00
U.S. Cl. 128—303 R 17 Claims



A holder for a pivoting disc heart valve used to implant the valve in a heart. The holder has an elongated handle carrying a disposable collet. The collet has a body adapted to be releasably connected to the end of the handle. One end of the body has an enlarged head having a groove for accommodating a portion of the valve disc to hold the disc in the open position. Integral with the head is an elongated flexible band adapted to be positioned over the side arms and disc of the valve to cover the side arms and disc. A portion of the band is attached to the body to hold the band in engagement with the side arms and disc.

3,828,788
LASER OPTHALMOSCOPE
Mikhail Mikhailovich Krasnov, ulitsa Usievicha 11, kv. 83; Mitrofan Fedorovich Stelmakh, Universitetsky Prospekt, 5, kv. 528; Boris Nikolaevich Malyshev, ulitsa Butlerova 24, kv. 219; Vladimir Nikolaevich Prozorov, Varshavskoe shosse, 87, kv. 89; Pavel Ivanovich Saprykin, ulitsa Narodnogo Opolchenia 44 Korpus 1, kv. 12, and Maria Grigorievna Batrukova, ulitsa Novatorov, 18, korpus 2 kv. 3, all of Moscow, U.S.S.R.
Filed Nov. 24, 1972, Ser. No. 308,936
Claims priority, application U.S.S.R., Aug. 31, 1972, 1821987
Int. Cl. A61b 17/36
U.S. Cl. 128—303.1 5 Claims



A laser ophthalmoscope is disclosed comprising a pulse laser the radiation of which passes through a light-guide

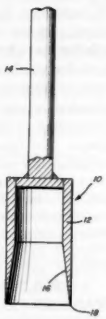
system and an aiming system so as to be directed to the opthalmologic object which is observed with the help of an illumination system. The light-guide system comprises a light-adding means, a mirror and a rotary focusing element which are sequentially mounted along the path of the laser beam and secured on a body hinge-coupled with the mount of the ophthalmoscope. The illumination system comprises a laser source of coherent radiation secured on the same body and operating at a wavelength close to that of the pulse laser. The mirror is mounted so that it can rotate about two orthogonal axes one of which coincides with the direction of the laser beam incident on the mirror; the rotary focusing element can rotate about the axis which coincides with the direction of the laser beam incident on the element, and the laser source of coherent radiation is mounted so that its beam is combined with that of the pulse laser in the light-adding device.

3,828,789

YOUNG CALF DEHORNER

LaVern L. Young, P.O. Box 353, Wellington, Utah 84542

Filed Feb. 23, 1973, Ser. No. 335,140
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.1 **1 Claim**



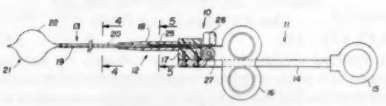
A device for dehorning young calves in the form of a tubular member having a tapered inner surface defining a sharp edge. The tubular member includes a bar stock handle which enables the dehorner to be heated by placing it in a fire and then used to dehorn small calves by simultaneously removing the horn and cauterizing the ends of blood vessels and the surface area from which the removed portion was cut out.

3,828,790

SURGICAL SNARE

Lawrence F. Curtiss, Englewood, N.J., and Richard W. Hall, New Cannaan, Conn., assignors to American Cytoscope Makers, Inc., Pelham, Mass.

Filed Feb. 28, 1973, Ser. No. 336,631
Int. Cl. A61b *17/00*
U.S. Cl. 128—320 **8 Claims**



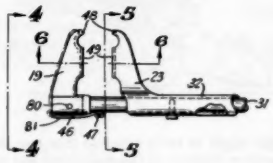
Surgical snare has an operating loop formed with a resilient spiral sleeve through which a core member extends. The core member is flat and resilient, forming a spring which has greater flexibility in the direction parallel to the rest plane of the operating loop than normal thereto, thereby providing a surgical snare with a loop which, though having the thickness of the spiral sleeve, has substantially the flexibility of the much thinner core member in the directon parallel to the plane of the loop.

3,828,791

SURGICAL INSTRUMENTS

Manuel V. Santos, Soutelo Branca, Aveiro, Portugal

Filed Mar. 21, 1973, Ser. No. 343,529
Int. Cl. A61b *17/00*
U.S. Cl. 128—321 **1 Claim**



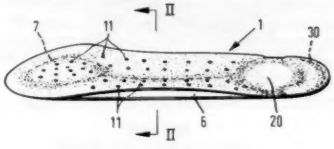
Surgical instruments, particularly rectal hemo-clip applicators have a handle consisting of two parts which are interconnected pivotally and resiliently. The two handle parts are connected to two elongated members located one within the other and movable relatively to each other when the handle is actuated. The outer ends of the two members have jaws which are movable toward and away from each other to carry out surgical operations.

3,828,792

SHOE LINERS

Antonin Valenta, Seestrasse 9, 714 Ludwigsburg, Germany

Continuation-in-part of Ser. No. 875,246, Nov. 10, 1969, abandoned. This application Jan. 4, 1972, Ser. No. 215,367
Claims priority, application Germany, Nov. 18, 1968, 6807480
Int. Cl. A61f *5/14*
U.S. Cl. 128—619 **8 Claims**



A shoe liner, which in one embodiment comprises a covering layer having fine nodules, a pad underneath the layer for supporting the arch of the foot, a support part supporting the foot arch, a heel bone support with a kidney shape cooperating with the support part to form a heel through whose rear limit is formed by the heel bone support; and in another embodiment, the shoe liner comprises two outer layers between which is sandwiched a contoured arch support that extends under the central portion of the wearer's foot.

3,828,793

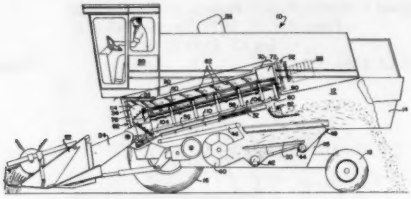
CROP FEEDING MECHANISM FOR AXIAL FLOW COMBINES

Caroll Q. Gochanour, Moline, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed June 29, 1973, Ser. No. 375,207
Int. Cl. A01f *12/18*
U.S. Cl. 130—27 T **8 Claims**

An axial flow combine of the type embodying threshing and separating means in the form of a generally cylindrical casing

within which a vaned rotor operates and which defines a threshing region and a separating region. Helical impeller vanes on the forward end of the rotor impel the crop material rearwardly into the threshing region for conduction therethrough and from thence into and through the separating region. To enhance the capacity of the casing and rotor to handle crop material, a pair of transverse sheets which extend



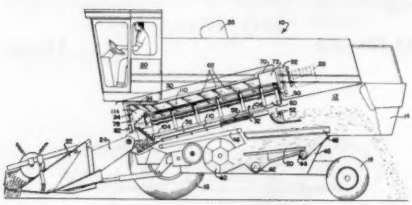
at a slight angle to each other so that one sheet is slanted in one direction relative to the rotor axis and the other sheet is slanted in the opposite direction, cooperate to establish, in effect a front wall for the casing. These sheets cooperate with the rotating impeller vanes to receive the backlash material which issues from the impeller and direct it forwardly into the working region of the latter.

3,828,794

CROP-DIVERTING SHED BAR AND BEARING PROTECTOR FOR AXIAL FLOW-TYPE COMBINES

Carroll Q. Gochanour, Moline, and Richard A. DePauw, East Moline, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed June 29, 1973, Ser. No. 375,270
Int. Cl. A01f *7/06*
U.S. Cl. 130—27 T **11 Claims**



A combined crop-diverting shed bar and bearing protector for the rotor shaft of an axial flow-type combine. A unitary casting is fixedly secured to a structural element of the combine chassis and serves the multiple purpose of diverting the crop material, which is fed endwise against a rotating impeller, radially outwardly and away from the centrally located bearing which supports the rotor shaft, and of affording a protective shield for the bearing against the infiltration of dust or other foreign matter.

3,828,795

TOBACCO PRODUCT

Joseph N. Schumacher, and Charles R. Green, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed June 21, 1973, Ser. No. 372,006
Int. Cl. A24b *15/02*
U.S. Cl. 131—17 **6 Claims**

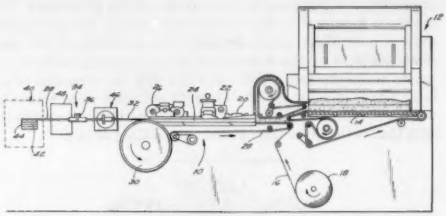
Addition of indanones and indenones to tobacco to enhance the flavor and/or aroma thereof.

3,828,796

CIGARETTE CUTOFF AND FILTER TIP ATTACHMENT REGISTRATION APPARATUS

Everett N. Finn, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 20, 1972, Ser. No. 316,681
Int. Cl. A24c *05/28, 05/31*
U.S. Cl. 131—21B **6 Claims**



Cigarette paper with printed registration marks is utilized in the formation of a cigarette rod on a making machine. The cigarette rod is cut at prescribed intervals along the registration mark. In view of variations in repeat lengths of paper between registration marks, the cut of the rod is automatically adjusted to register with the mark by a control which operates to sense the location of the mark in relation to the cutting knife. In the manufacture of filter tip cigarettes employing the cut rods having registration marks thereon, a filter tip attachment machine is located at the discharge end of the cigarette making machine. The operation of the attachment machine is in timed relationship with the cutting of the rod, whereby any adjustment in the latter is reflected by a corresponding adjustment in the drive of the attachment machine. This synchronization insures against jamming of the cut rod entering the filter tip attachment machine.

3,828,797

TOBACCO EXPANSION PROCESS UTILIZING MICROWAVE ENERGY

Calvin L. Neumann, Clemmons, and Freddie W. Best, Winston-Salem, both of N.C., assignors to Reynolds Leasing Corporation, Jacksonville, Fla.

Filed July 7, 1971, Ser. No. 160,543
Int. Cl. A24b *3/18*
U.S. Cl. 131—140 P **13 Claims**

The filling capacity of tobacco is increased by exposing tobacco having a moisture content in excess of ten percent by weight impregnated with a volatile organic liquid to a source of microwave energy having a frequency of 300 MHz to 300 GHz whereby to volatilize the liquid and concomitantly expand the tobacco.

3,828,798

AROMATIC TOBACCO FORMING PROCESS

Patrick H. Harper, Louisville; Charles F. Gregory, Middletown, and Phillip R. Fisher, Louisville, all of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

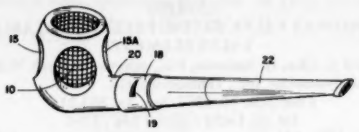
Filed Nov. 20, 1972, Ser. No. 308,162
Int. Cl. A24b *03/12, 07/00*
U.S. Cl. 131—145 **5 Claims**

A method of forming aromatic tobacco by heating the tobacco to a predetermined temperature and then cutting the tobacco while hot, for example, at a temperature such as 140 to 150 F. to thereby obtain improved smoke, aroma and appearance characteristics of the tobacco. The tobacco is moisturized before the cutting so that it manifests a moisture content of 21%–26%. During the cutting the tobacco is maintained under a pressure of 2,000–5,000 pounds externally applied.

3,828,799
TOBACCO SMOKING EQUIPMENT

Jon W. Beam, 510 E. Cherry St., Cushing, Okla. 74023

Filed Feb. 2, 1973, Ser. No. 328,921
Int. Cl. A24f *1/22, 5/04*
U.S. Cl. 131—195 10 Claims



Tobacco smoking equipment comprising a disposable charge housing formed by compressing a folded section of porous and absorbent paper within a folded section of small mesh metal screen which is subsequently shaped into a sleeve-like unit wherein the opposite ends of the assembly are in overlapping relationship. The thusly formed charge housing is fully inserted in the ventilated bowl section of a smoking holder having a stem section affixed thereto in a pipe like configuration. Additionally, a small hole is provided in the forward portion of the stem section which penetrates into the longitudinal smoke channel within said stem section, said hole being covered by a tapered sleeve like member having a triangular shaped opening in the sidewall thereof. The tapered sleeve member is slidably installed on the aforesaid stem section so as to provide an adjustable valve member for blending air with the tobacco smoke in controllable amounts.

3,828,800
TOBACCO SMOKE FILTER MATERIAL

Elmer Francis Litzinger, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Division of Ser. No. 75,772, Sept. 25, 1970. This application Sept. 11, 1972, Ser. No. 287,633
Int. Cl. A24f *7/04*
U.S. Cl. 131—262 5 Claims

An improved cigarette filter material is formed from the porous, granular salt of a weakly basic anion exchange resin, said salt being formed by the at least partial neutralization of the basic resin by a weak acid. The salt is characterized by a surface area of from about 1 to 100 square meters per gram, a pore volume of from 0.2 to 0.5 cubic centimeters per gram, an average pore diameter of from about 0.1 to 1.0 microns and the salt is formed by the at least partial neutralization of the basic resin by a weak acid having a pKa between 3.5 and 5.5.

3,828,801
FILTER FOR REMOVING POLYNUCLEAR AROMATIC HYDROCARBONS FROM TOBACCO SMOKE

Edward W. Merrill, Cambridge, Mass., assignor to Hans H. Estin, Leonard W. Cronkhite, Jr. & William W. Wolbach, trustees of The Charles River Foundation

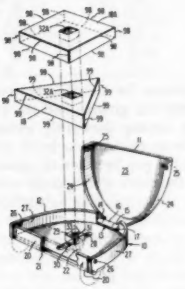
Division of Ser. Nos. 888,505, Dec. 29, 1969, Pat. No. 3,679,625, and Ser. No. , , Division of Ser. No. 233,935, March 13, 1972, Pat. No. 3,774,623. This application May 4, 1973, Ser. No. 357,361
Int. Cl. A24b *15/02*
U.S. Cl. 131—265 8 Claims

Polynuclear Aromatic Hydrocarbons (PAH) can be absorbed and thereby removed from tobacco gas-smoke by polysiloxane compositions. The polysiloxanes employed have a molecular weight greater than 100,000 and can be located in the filter section of a tobacco smoking device in admixture with an endothermically dissociable hydrate or carbonate filler. The latter functions to limit the temperature rise of the polysiloxane and thus prevents the desorption of hydrocarbons adsorbed thereon.

3,828,802
DRY COLOR APPLICATOR FOR HAIR

Abram N. Spanel, 344 Stockton St., Princeton, N.J. 08540

Filed Apr. 14, 1972, Ser. No. 244,064
Int. Cl. A45d *19/00*
U.S. Cl. 132—9 16 Claims



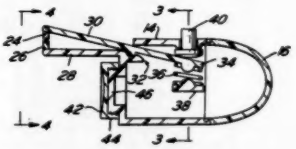
Compact enclosures adapted to receive and fully utilize multi-sided blocks of wax including coloring material in intimate mixture therein for pressure-coloring human hair. In one preferred embodiment, the block of wax is rotatable within the enclosure so that in turn different sides of the block of wax can be aligned with and then moved through an open end of the enclosure.

In another preferred embodiment, the enclosure has a plurality of open ends to enable different sides of the block of wax in turn to be pushed through the open ends for pressure application to the hair. Brush and comb attachments may be rigidly, pivotally, or releasably attached to the container in a position substantially coextensive and adjacent to an open-end portion for stroking the hair as the wax is pressure-applied.

3,828,803
EYELASH APPLICATOR

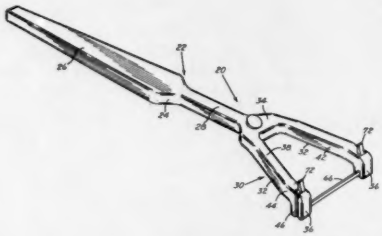
Robert K. Windsor, 417 Spruce St., Philadelphia, Pa. 19106

Continuation-in-part of Ser. No. 262,384, June 13, 1972. This application Sept. 24, 1973, Ser. No. 400,294
Int. Cl. A45d *2/00*
U.S. Cl. 132—31 A 8 Claims



An eyelash applicator having at least one pivotable jaw provided to assist in supporting and applying artificial eyelashes in a manner whereby the applicaton of the eyelash may be observed by a mirror on the applicator.

3,828,804
DENTAL DEVICE
Richard N. Ely, Apt. 362, Brooks Towers, Denver, Colo. 80202
Filed Jan. 30, 1973, Ser. No. 328,046
Int. Cl. A61c *15/00*
U.S. Cl. 132—91 **10 Claims**

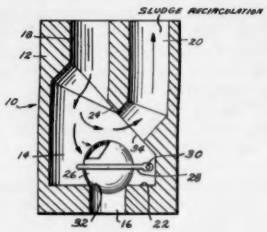


A hand-held device for cleaning between the teeth and in the sulcus between the gingiva and the crown of a tooth includes a handle having forwardly extending spaced arms adapted to retain an elastomeric band under tension so that the band bridges the gap between the spaced arms and can be passed between the teeth and into the sulcus to remove food particles, plaque and other like substances. The band is disclosed in two embodiments, one of which comprises a straight band having a relatively thin intermediate portion and enlarged integral heads which flare outwardly from opposite ends of the intermediate portion and are adapted to seat in notches provided in the arms of the handle. Raised ridges are provided in the intermediate portion of the band to provide an abrasion surface for facilitating removal of plaque from the teeth. An endless band embodiment is also disclosed which bridges the gap between the spaced arms and is anchored to an anchor post on the handle to establish the desired tension in the elastomeric band.

3,828,805
SELF-CLOSING UMBRELLA FRAME
Klaus Thur, Solingen, Germany, assignor to Telesco Brophey Limited, East Montreal, Quebec, Canada
Filed May 22, 1973, Ser. No. 362,758
Claims priority, application Germany, June 2, 1972, 2226754
Int. Cl. A45b *25/16*
U.S. Cl. 135—22 **4 Claims**

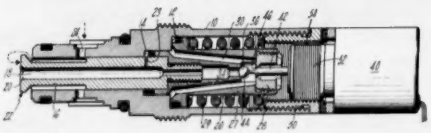
A self-closing automatic umbrella of the type which can be opened from a closed position to an umbrella erect position by applying pressure to the end of the stick to telescope the umbrella stick, such as pressing the stick against the ground and which can be closed by releasing a suitable release. An independent locking device is provided for locking the stick in a stick extended position so that the umbrella, when closed, can be used as a walking stick and whereby the independent locking device can be released to allow the umbrella stick to be telescoped for opening the umbrella.

3,828,806
TWO-WAY VALVE HAVING FREELY PIVOTABLE VALVE ELEMENT
Edmond A. Glos, II, Sarasota, Fla., assignor to Davis Water & Waste Industries, Inc., Thomasville, Ga.
Filed June 15, 1972, Ser. No. 263,211
Int. Cl. G05d *11/00*; F16k *15/04*
U.S. Cl. 137—111 **1 Claim**



The invention is related to an automatic two-way valve especially useful with the discharge of sludge effluent from a tank, but having other uses. The valve has a dual purpose and function in that it can be responsive to two different conditions of the sludge effluent. In one particular use the valve includes a member having a predetermined specific gravity correlated to the density condition of the sludge so that variations in sludge density vary the buoyancy of the valve member to cause it to move between alternative flow controlling positions. In another particular use the valve member is responsive to the variations in conditions of sludge flow so as to cause it to also move between alternative flow controlling positions.

3,828,807
PRESSURE REGULATOR
Michael H. Dawes, Rexford, N.Y., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Aug. 13, 1973, Ser. No. 388,028
Int. Cl. F16k *31/14*
U.S. Cl. 137—495 **10 Claims**

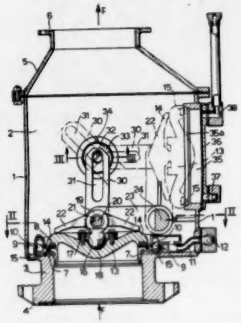


A regulator device which will selectively regulate about one of two pressure levels is disclosed. The regulator device includes a regulator poppet which defines two pressure sensing areas and a solenoid actuated valve for controlling application of the regulated pressure to either one or both sensing areas to selectively establish, in cooperation with a biasing spring, balanced positions of the poppet commensurate with the two pressure levels. The poppet is disposed in a valve housing and cooperates therewith to modulate the flow from a pressurized fluid source to the region wherein the pressure level is to be regulated.

3,828,808
EXHAUST VALVE FOR INTERNAL COMBUSTION ENGINE

Aurelio Ortelli, Bologna, Italy, assignor to Riva Calzoni S.p.A., Milan, Italy

Filed Feb. 6, 1973, Ser. No. 330,151
Claims priority, application Italy, Feb. 28, 1972, 21124/72
Int. Cl. F16k 31/44, 1/16
U.S. Cl. 137—340 4 Claims

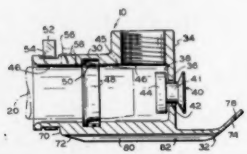


A valve for sealing the exhaust passage of an internal combustion engine to prevent the ingress of fluids under pressure when the engine is not working. The valve comprises an annular valve seat closable by a circular valve shutter disc or plate which is carried at the ends of two pivoted arms. The valve shutter plate is pivoted with respect to the two arms and provided with a mechanism for turning the plate with respect to the arms automatically as the valve is opened, to turn the operating face of the shutter plate away from the stream of hot exhaust gases which pass through the port surrounded by the annular valve seat, when the engine is running. Means for cooling the operating face of the shutter plate while the engine is running are also provided.

3,828,809
TRAIL LINE SHOE

Lloyd W. Clements, Woodland, Calif., assignor to Ireco Industries, Inc., Eugene, Oreg.

Filed Dec. 13, 1972, Ser. No. 314,763
Int. Cl. F16k 45/00
U.S. Cl. 137—344 7 Claims

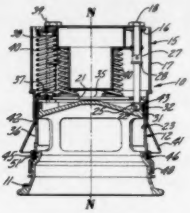


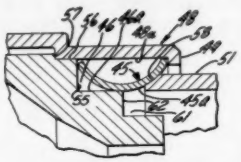
An irrigation move has a trail line pulling a trail line shoe provided with a skid plate tapering at its forward end to a cylindrical, coupler body and having a sloping rear end to permit reverse movement of the trail line. The skid plate has a longitudinal groove which causes the skid plate to slide over mud.

3,828,810
TEMPERATURE RESISTANT SEAL AND VALVE ASSEMBLY

James D. Evers, deceased, late of Corry, Pa.; Louisa E. Bender, and Donald A. Bender, executors, both of North Haven, Conn., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Sept. 25, 1972, Ser. No. 291,983
Int. Cl. F16k 1/42
U.S. Cl. 137—494 14 Claims



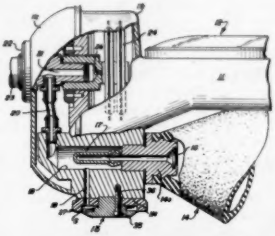


Structure providing a seal, e.g., in pressure relief valves typically to be provided in the servo-modulating or shutoff type, wherein a sealing ring of C-shaped cross section is supported on one of two relatively movable members of the valve housing for continuous contact by the other member when engaged thereby. The sealing ring of C-shaped cross section is particularly useful where the seal is subjected to repetitive opening and closing cycles accompanied by the movement of fluid at elevated temperatures between the seal ring and the valve lip portion of the member which moves into and out of contact with the ring.

3,828,811
VALVE ASSEMBLY

Zygmunt Natkanski, Chicago, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 31, 1973, Ser. No. 365,600
Int. Cl. F16k 37/00
U.S. Cl. 137—556 9 Claims



A valve assembly is provided for use in a sphygmomanometer and includes a housing provided with an elongated first air

passageway and a second air passageway having one end thereof communicating with the first passageway and the second end thereof terminating at an exterior surface portion of the housing. A valve piece overlies the housing exterior surface and is mounted thereon for manual rotation through a predetermined sector, delimited by first and second positions of adjustment. Rotation of the valve piece is about an axis disposed transverse of the exterior surface portion. The valve piece is provided with a passageway which interconnects first and second surface portions. The valve piece first surface portion is in sliding sealing engagement with the housing surface portion. One of the engaging surface portions is provided with an elongated groove extending from the end of the passageway terminating at the one engaging surface portion. The cross-sectional size of the groove diminishes uniformly from a maximum at the passageway end to zero at the distal end of the groove. When the valve piece is at the first position of adjustment the housing second passageway and the valve piece passageway are aligned with one another. When the valve piece is at the second position of adjustment, the housing second passageway is closed off by the valve piece.

3,828,812

PRESSURE-MONITORING RELIEF VALVE

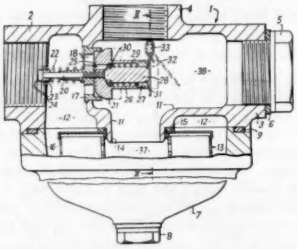
Brian Read, 18 Wheatland Rd., Heswall, Wirral, England

Filed June 14, 1972, Ser. No. 262,879

Claims priority, application Great Britain, June 14, 1971, 27819/71

Int. Cl. F16k *37/00*

U.S. Cl. 137—557 **7 Claims**



A pressure-monitoring relief valve for a filter comprises a pressure-monitoring member slidable in a bore in a relief valve member against a spring in response to differential pressure between its ends, one of which bears against a lever on a shaft carrying an indicator. The relief valve member is applied against its seat by a further spring. The indicator gives a progressive external indication of increasing pressure drop across the filter and a further external indication movement when the relief valve opens due to the filter being clogged.

3,828,813

CONTROL DEVICE FOR LOAD-INDEPENDENT FLOW REGULATION

Hubert Haussler, Neuheim, Switzerland, assignor to Beringer Hydraulik R. Beringer & Co., Neuheim, Switzerland

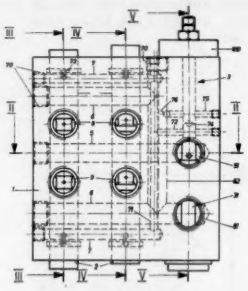
Filed Feb. 14, 1973, Ser. No. 332,274

Claims priority, application Switzerland, Feb. 18, 1972, 2385/72

Int. Cl. F16k *13/00*; **F16b** *1/00*

U.S. Cl. 137—596.13 **8 Claims**

A control apparatus for load-independent flow regulation, with at least one control unit having a slide valve, a pressure difference balance, conduits leading to a pump and to a consumer and a conduit communicating the pressure in the consumer unit to the pressure difference balance, is disclosed. This last conduit has first and second sections. The first section passes through the slide valve and, when the slide valve is moved out of the neutral position, opens into an annular groove provided in the slide valve bore. The second section



extends from this annular groove and has located therein an operating piston which in one position connects a chamber of the pressure difference balance containing the pressure spring to this conduit and in the other position connects this chamber to a return conduit to a tank.

3,828,814

ELECTRICAL CONTROL ARRANGEMENT FOR GAS OR STEAM TURBINES

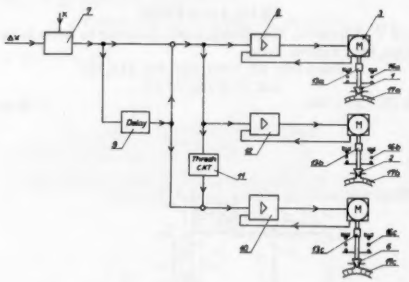
Klaus Neumann, and Wolfgang Fritz, both of Berlin, Germany, assignors to VEB Bergmann-Borsig/Goerlitzer Maschinenbau, Berlin, Wilhelmsruh, Germany

Filed Oct. 16, 1972, Ser. No. 297,990

Claims priority, application Germany, Sept. 15, 1971, 7115772; Nov. 20, 1971, 7115916

Int. Cl. F01d *17/00*; **F03b** *15/06*

U.S. Cl. 137—599 **7 Claims**



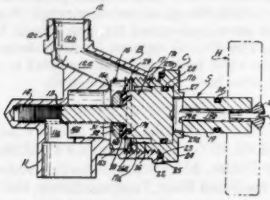
The basic flow rate for any given output is controlled by main valves driven by a relatively slow electrical drive having a high operating force. Small output changes are rapidly corrected by error valves driven by an electrical system having a very short time constant and a relatively low operating force. Only one error valve is used for correcting flow rate in conjunction with any of the main valves. All valves operate under spring pressure, so that release of a mechanical coupling coupling the valves to the drive system causes a very rapid closing of the valves.

3,828,815

FIXTURE SHUTOFF VALVE WITH DRAIN

Irlin H. Botnick, 3155 Kerdale, Pepper Pike, Ohio 44124

Filed July 26, 1973, Ser. No. 382,946
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.26 12 Claims



A compact, low cost shutoff valve for a fixture water supply line, which blocks flow by the front of a stem-carried main piston advanced into and slidingly sealing a bore forming part of the inlet-to-outlet flow path; and with closing motion continued after shutoff, a trailing part of the stem as a sealing piston leaving a sealed relation with a cylindrical body cap part exposes drainage openings in a hollow stem.

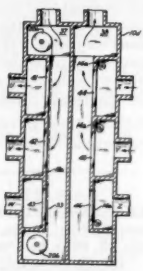
A novel main seal eliminates possibility of seal damage by overtightening after shutoff.

3,828,816

FLUID FLOW CONTROL VALVES

Herbert L. Barnebey, Columbus, Ohio, assignor to Barnebey-Cheney Co., Columbus, Ohio

Continuation of Ser. No. 218,114, Jan. 17, 1972, Pat. No. 3,773,077. This application Apr. 16, 1973, Ser. No. 351,290
Int. Cl. F16k *13/00*
U.S. Cl. 137—625.28 3 Claims



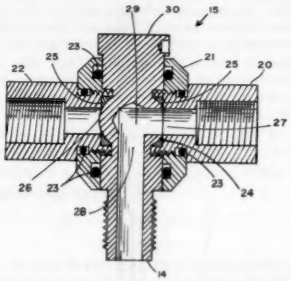
This disclosure relates to valves and valving systems for controlling the flow of fluids, particularly vapors and gases, through ports of relatively large area with relatively low pressure drops. The type of valve disclosed I call a "curtain valve"; it is comprised of an impervious flexible sheet (the curtain) movably installed to cover and uncover an opening or port on the upstream side so that the curtain seals around the edges of the port under the pressure differential across the port. To prevent deflection of the central part of the flexible sheet through the port opening a grid coextensive in area with the port opening may be provided on the downstream side, the bars of the grid being sufficient in number and spacing to support the flexible sheet or curtain which covers (or throttles) the port area. The particular type of curtain valve illustrated and described in this disclosure is characterized by an impervious sheet between reels at opposite ends of the grid, the sheet sliding across the grid as the reels are rotated together.

3,828,817

VALVE ASSEMBLY

Arthur A. Anderson, St. Paul, Minn., assignor to Speciality Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1973, Ser. No. 330,992
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.47 7 Claims



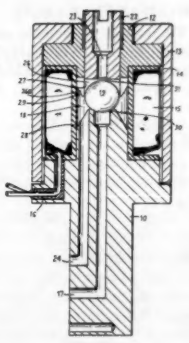
A chamber housing contains a number of outlet passageways through its walls and an inlet passageway is provided through another member located in the chamber. The housing can be adjusted with respect to the other member to selectively close off the outlet passageways or to place them in communication with the inlet passageway. In its preferred application spray heads are attached to the outlet passageways to be selectively coupled to the inlet passageway.

3,828,818

FLUID CONTROL VALVES

Norman Hunt, Rugby, England, assignor to Associated Engineering Limited, Leamington Spa, England

Filed Jan. 8, 1973, Ser. No. 321,675
Claims priority, application Great Britain, Jan. 14, 1972, 1962/72
Int. Cl. F16k *31/06*
U.S. Cl. 137—625.65 6 Claims

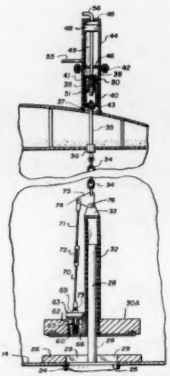


A fluid control valve comprises a solenoid for generating an electromagnetic field, a fluid passage and a ferromagnetic ball for controlling fluid flow through the fluid passage. When the solenoid is energized with electricity the ferromagnetic ball is moved from a first position to a second position, in one of which positions the ball closes said fluid passage and in the other position the fluid passage is open.

3,828,819
TANK WITH INTERNAL FAIL-SAFE VALVE

Erik E. Brogren, Wheaton, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Sept. 7, 1972, Ser. No. 286,984
Int. Cl. F16k *31/16*
U.S. Cl. 137—630.15 **9 Claims**

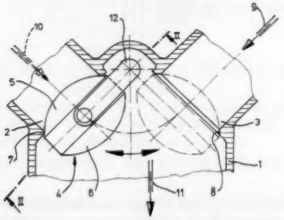


An improved enclosed storage tank, for a liquid product, having a bottom opening communicating with a discharge pipe, and a fixed-position roof, comprising a fail-safe apparatus for closing the bottom opening internally of the tank, said apparatus including the valve means inside of the tank, the valve means having a valve seat around the bottom opening and a valve closure adapted to span the bottom opening and contact the valve seat in closing the opening, and suspending means extending from the valve closure to a control means, said control means being capable when activated to raise and hold the suspending means in raised position with the valve closure above the valve seat and the valve thus open, and when deactivated to permit the suspending means to drop and the valve closure to automatically contact the valve seat and close the bottom opening.

3,828,820
TWO-WAY FLAP VALVE

Herbert Schrader, Finkenhaus, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Jan. 12, 1973, Ser. No. 323,078
Claims priority, application Germany, Jan. 14, 1972, 2201601
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.4 **4 Claims**

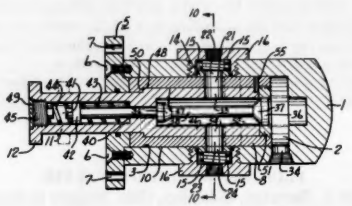


A two-way flap valve that has two selectively closable flow passages formed in it includes a housing and two valve seats in the housing, each valve seat being associated with a different flow passage. A valve body has two spherical sealing surfaces formed on it, and each sealing surface engages a corresponding valve seat to close an associated flow passage. The valve body is mounted on a pivotable axle for limited movement in a plurality of directions to permit the valve body to center itself relative to each valve seat when the valve seat is engaged by a corresponding sealing surface. In one embodiment of the invention, the valve body is mounted on the axle by a fork-like member defined by two spaced-apart posts and a portion of the axle to which the posts are connected. A shaft extends between the posts and passes through a bore formed in the valve body. The bore is tapered inwardly from the exterior surface of the valve body and is dimensioned to permit movement of the valve body relative to the shaft.

3,828,821
PRESSURE REGULATOR FAUCET SLIDE VALVE

John Henry Dotter, 810 Ocean Monarch Condominium, 133 N. Pompano Beach Blvd., Pompano Beach, Fla. 33062

Continuation-in-part of Ser. No. 765,776, Oct. 8, 1968, abandoned. This application Mar. 2, 1971, Ser. No. 120,177
Int. Cl. F16k *11/18*; **G05d** *16/00*
U.S. Cl. 137—636.4 **15 Claims**

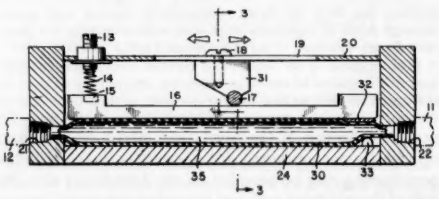


A pressure regulating faucet that maintains a predetermined discharge pressure less than the supply pressure regardless of the amount of water issuing from the faucet in combination with parts in a flat face slide valve surface to regulate the amount of water issuing from the faucet or the proportionate mixture of different or hot and cold water and in combination with a concentric rotary proportioning selector valve having an axial bore containing the pressure regulator valve operable axially within the bore of the rotary selector valve. The slide valve and the rotary proportioning valve and the pressure regulating valve are coaxially concentric to each other cooperating in performing their valvular function upon the water entering the housing radially and discharging axially.

3,828,822
ADJUSTABLE PRESSURE CONTROL VALVE

Theo Witte, 1630 Emerald Way, Perris, Calif. 92370

Filed May 21, 1973, Ser. No. 362,397
Int. Cl. F15d *1/02*
U.S. Cl. 138—45 **3 Claims**



A pressure regulating valve which is readily adjustable in continuous operation, for regulating the outlet pressure of a fluid, liquid or gas, flowing through the valve, said valve being

capable of maintaining a uniform outlet pressure despite variations in the rate of flow or in the inlet line pressure. The valve contains a flexible tubing or bladder through which the fluid flows, with a lever arm resting along the length of the tubing. The lever arm is backed against a roller which may be located at any point along the length of the lever arm, so as to vary the pivot point of the lever arm as rotated by the pressure exerted by the tubing against both sides of the pivot point. Rotation of the lever arm in the closing direction acts to clamp the input end of the tubing so as to restrict the flow of fluid into the tubing and thus restrict the outlet fluid pressure.

3,828,823

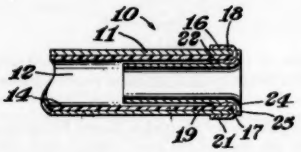
LINED CONDUIT JOINTS

Burke Douglas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 75,427, Sept. 25, 1970, Pat. No. 3,742,590. This application Nov. 20, 1972, Ser. No. 308,273

Int. Cl. F16l 9/00, 19/00

U.S. Cl. 138—109 **3 Claims**



Joints are prepared in ductile metal conduits having thermoplastic lining by affixing the lining to the terminal portion of the conduit and deforming the conduit and lining simultaneously to form an outwardly extending flange adapted to mate with a like flange wherein the lining material may contact a like lining material of similar conduit end.

3,828,824

DEVICE FOR ENGAGING AND DISENGAGING THE DOBBY SHAFT AND PICKING SHAFT OF LOOMS

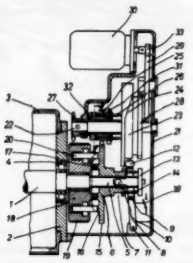
Helmut Macho, Konstanz, Germany, assignor to Adolph Saurer Ltd., Arbon, Switzerland

Filed Nov. 27, 1972, Ser. No. 309,635

Claims priority, application Switzerland, Jan. 11, 1972, 377/72

Int. Cl. D03d 51/00

U.S. Cl. 139—1 E **7 Claims**



The device includes means for permitting coupling of the dobby shaft and picking shaft in only two angular positions which are displaced by 180°, and includes an auxiliary shaft which is selectively driven either by an electric motor or by a hand operated chain and sprocket drive and which includes a cam for actuating a shifting lever for the purpose of moving a settable coupling member rotatable with the dobby shaft axially between two axially spaced positions. A first coupling is engageable to connect the coupling member to the drive member in a first axial position of the coupling member, and a second coupling is engageable to connect the coupling member to the auxiliary shaft in a second axial position of the coupling member. The drive member is driven by the picking shaft and is freely rotatable on the dobby shaft, and includes a roller which bears against a side of the settable coupling member to prevent it from engaging the first coupling except when a selected relative angular position of the settable coupling member and the drive member is attained. The cam actuates the shifting lever to displace the coupling member axially of the dobby shaft to disengage the first coupling and to engage the second coupling responsive to selective rotation of the auxiliary shaft. Springs normally bias the coupling member to engage the first coupling and to disengage the second coupling. When the shifting lever is moved to shift the coupling member to engage the second coupling, it actuates a switch connected in a circuit for the electric motor for selectively driving the auxiliary shaft.

3,828,825

APPARATUS FOR MANUFACTURING SLIDING CLASP FASTENERS HAVING COUPLING LINKS WOVEN INTO THE EDGE OF A SUPPORTING TAPE

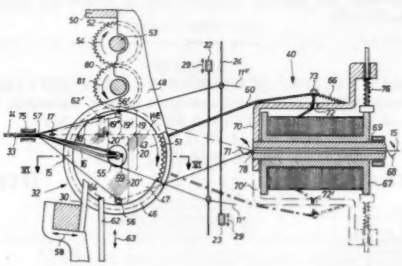
Friedrich Glindmeyer; Karl Limpens, both of Stolberg, and Wilhelm Hennenberg, Alsdorf, all of Germany, assignors to Firma William Prym-Werke KG, Stolberg, Germany

Filed July 17, 1972, Ser. No. 272,667

Claims priority, application Germany, July 20, 1971, 2136154

Int. Cl. D03d 41/00

U.S. Cl. 139—35 **5 Claims**



An apparatus for manufacturing sliding clasp fasteners having coupling links formed by a deformed thread material woven into the edge of a supporting tape, which comprises a device for feeding a plurality of warp threads to a weaving zone, which warp threads define weaving sheds. A device for laying weft threads in the weaving sheds. A rotor is mounted for rotation about an axis parallel with the weft threads and lies in a plane adjacent one limit of the weaving sheds. A loop-forming mandrel associated with the rotor and having one end supported substantially on the axis of rotation of the rotor and being of sufficient length to extend to the weaving zones. The rotor defines an aperture remote from the axis of rotation thereof for feeding the deformable warp thread to a mandrel such that the deformable thread is shaped by the mandrel to form a row of loops woven into a supporting tape, and the apparatus comprises at least two weaving zones, each being provided with its own of the rotors and mandrels for the simultaneous formation of at least two tapes having a deformable thread woven into the edge thereof. The axes of rotation of said two rotors being located at opposite sides of the shed, and the rotors are capable of being driven in opposite directions.

3,828,826

JACQUARD MECHANISM

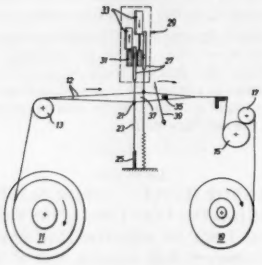
Rene Hurzeler, Dietikon, Switzerland; Antonius Vinnemann, Stuttgart, and Peter Doslik, Bonlanden, both of Germany, assignors to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed June 12, 1972, Ser. No. 263,753

Claims priority, application Germany, June 19, 1971, 2130502

Int. Cl. D03c *3/00, 3/22*

U.S. Cl. 139—59 34 Claims



The weaving machine is provided with control elements which are flexed or moved between one of two positions by magnetic, electrical or thermal forces as to program the movement of the healds in forming a shed. The use of jacquard cards to interdict or to permit dropping of jacquard needles connected to the healds can thus be eliminated. The control elements are used in single-lift and in double-lift jacquard mechanism.

3,828,827

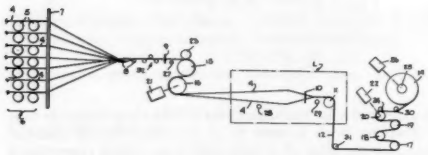
MANUFACTURE OF WOVEN WIRE TIRE CORD FABRIC

Jerry L. Witt, Winnsboro, and Allen Layson, Columbia, both of S.C., assignors to Uniroyal, Inc., New York, N.Y.

Filed July 31, 1972, Ser. No. 276,483

Int. Cl. D03d *49/04, 15/02*

U.S. Cl. 139—99 11 Claims



A novel method and apparatus for producing plain or leno woven wire tire cord fabric, in which fabric the metal wire cord warps are interwoven with relatively widely spaced continuous textile filament picks and which is characterized by high dimensional stability and maintenance of uniformity of cord distribution during take-up as well as during calendering and subsequent tire building operations, are disclosed. The fabric can be woven on a textile loom of generally conventional construction but provided with special auxiliary equipment designed to maintain a required tension control on the tire cords both when they enter the loom and when they leave the loom as components of the woven fabric. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,828,828

GUIDING COMB FOR PICKING THE WEFT BY A STREAM OF GASEOUS PRESSURE MEDIUM

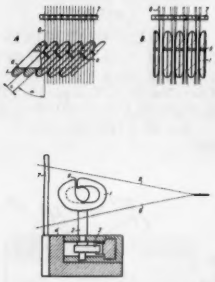
Jiri Cernocky; Miloslav Riha, both of Rybniky, and Josef Martinec, Luh, all of Czechoslovakia, assignors to Zbojovka Vsetin Narodni, Vsetin, Czechoslovakia

Filed Feb. 22, 1972, Ser. No. 227,875

Claims priority, application Czechoslovakia, Oct. 2, 1970, 667870

Int. Cl. D03d *47/30*

U.S. Cl. 139—127 P 3 Claims



A guiding comb for shuttleless looms for picking the weft thread into the shed of the loom, having teeth which can be adjusted in two angular positions, in the first one where the picking openings of the teeth form a practically completely closed channel, and in a second one, where gaps are created between adjacent teeth, enabling their entrance into and removal from the system of warp threads forming the shed.

3,828,829

WEFT INSERTING ARRANGEMENT OF FLUID-JET LOOM

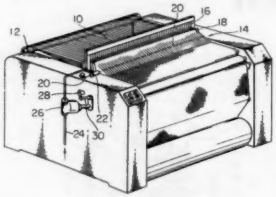
Miyoki Gotoh; Yukio Mizuno, and Kazuo Shibata, all of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 7, 1973, Ser. No. 330,309

Claims priority, application Japan, Feb. 15, 1972, 47-15915; Feb. 7, 1972, 47-13484

Int. Cl. D03d *47/30*; B65h *17/32*

U.S. Cl. 139—127 P 4 Claims



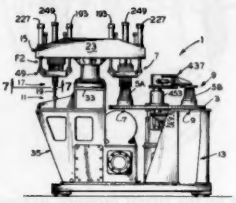
A weft inserting arrangement for use in a fluid-jet shuttleless loom using a solenoid-operated fluid flow control valve so that it is opened and closed in accordance with electric signals generated in synchronism with operating cycles of the loom and also so, that the timing and duration of the weft inserting cycles can be adjusted easily and precisely in accordance with the operating conditions of the loom and/or depending upon the types and counts of the weft yarns woven into cloth. The weft inserting arrangement may further have a fluid accumulator for projecting the weft yarn at a decreasing velocity so that the weft yarn in the shed of warp yarns is under a uniform tension.

3,828,830

APPARATUS FOR WINDING AND PLACING COILS IN THE SLOTS OF A STATOR

Donald E. Hill; Stanley D. Payne, both of Fort Wayne, Ind., and Robert G. Walker, Brighton, Mich., assignors to Industra Products Inc., Fort Wayne, Ind.

Filed Jan. 16, 1969, Ser. No. 791,704
Int. Cl. B21f 3/04
U.S. Cl. 140—1 15 Claims



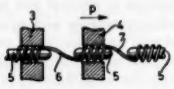
Apparatus for winding and placing coils in the slots of a stator, comprising a rotary index table carrying two sets of placer fingers spaced at 180° intervals, each set being adapted to hold two pole windings for a stator, a rotary indexing winding head carrying two pairs of coil forms spaced at 180° intervals, and a flyer for winding a wire into two groups of coils constituting two pole windings on the pair of coil forms at a winding station. After winding of the two pole windings on the pair of coil forms at the winding station, the winding head is indexed to bring this pair to a transfer station, where the two pole windings are transferred to a set of fingers on the table at the transfer station. After the transfer, the table is indexed to bring this set of fingers carrying the two pole windings to a placing station, where the two pole windings are pushed into the slots of a stator applied to the fingers.

3,828,831

METHOD OF MANUFACTURING A CHAIN OF FILAMENTS FOR FILAMENT LAMPS, DISCHARGE TUBES OR THE LIKE

Gosuines Phillippus Guilielmus Moeys, Varese, Italy, and Johannes Martinus Wittkamper, Amiens, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,944
Claims priority, application Netherlands, Mar. 16, 1972, 7203462
Int. Cl. B21f 3/04
U.S. Cl. 140—71.5 4 Claims



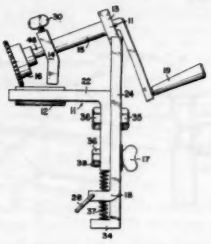
The invention relates to a method of manufacturing a chain of filaments in which a wire which is wound on a mandril is expanded by means of two jaws to form a straight intermediate member. As a result of this the mandril breaks between the jaws. The part of the wire and the mandril which is present between the jaws is preferably heated by the passage of current.

3,828,832

SCREEN REPAIR MACHINE

Wyatt Hartman, Lakeview, Iowa, assignor to The Raymond Lee Organization Inc., New York, N.Y.; a part interest

Filed July 17, 1973, Ser. No. 380,073
Int. Cl. B21f 33/00
U.S. Cl. 140—109 3 Claims



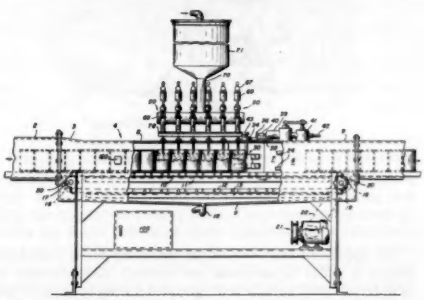
A machine to install screening into the frame of a window or door, which gives an improved seal between the screen and the frame, as well as increasing the production efficiency of the installation. The machine consists of a wheel manually driven by a handle mounted on a frame fitted with rollers, with the wheel serving to roll screening into a groove in the screen frame as the device is rolled along the screen frame.

3,828,833

ASEPTIC CONTAINER FILLING APPARATUS

Richard A. Smith, Gibsonia, and Chester L. Gutowski, Pittsburgh, both of Pa., assignors to H. J. Heinz Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 823,010, May 8, 1969, abandoned. This application June 14, 1971, Ser. No. 152,704
Int. Cl. B65b 3/12
U.S. Cl. 141—85 19 Claims

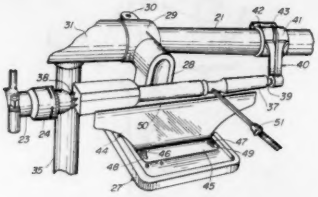


There is disclosed an apparatus for filling containers in a steam-filled sterile atmosphere. The containers move in a single line from a sterilizing chamber onto a continuously-moving conveyor in the elongated filling apparatus. Means interposed across the path of travel of the containers arrests the motion of the containers in such location that each of several containers is under a filling tube. When the containers are so arrested, an electric probe is lowered into each container, whereupon a filling valve for each tube opens and the product flows into the containers. When the product reaches the probe in each container, the valve for that container is closed. When all containers are filled, the probes lift, and the means that arrested the travel of the containers is released to let the filled containers pass until all filled containers are discharged and the following empty containers are arrested in position for a repetition of the filling cycle. Means are provided to prevent operation of the filling cycle if there is not a container under each filling tube.

3,828,834
ASSEMBLY FOR CONVERTING A DRILL PRESS TO A WOOD LATHE

Glenn B. Morse, 321 Fountain St. N.E., Grand Rapids, Mich. 49502

Filed Nov. 29, 1972, Ser. No. 310,649
Int. Cl. B27c 9/02
U.S. Cl. 144—1 C **3 Claims**

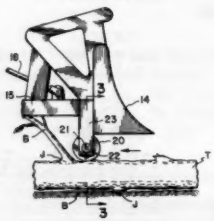


A drill press of a type in which the column is mounted on a fulcrum stand is provided with attachments through which work pieces are supported and rotatively driven, and the drill press table is used as a support for a tool rest adapted to both wood-turning and block-turning procedures.

3,828,835
DELIMBING METHOD AND APPARATUS

J. Stanton Cross, Sr., 1601 7th Ave., Conway, S.C. 29526

Filed Aug. 16, 1973, Ser. No. 388,854
Int. Cl. B27c 9/02
U.S. Cl. 144—309 AC **5 Claims**



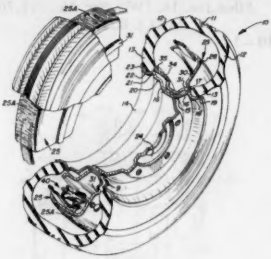
An apparatus and method for removing limbs from trees in which a roller is mounted for vertical displacement on a skidder or other vehicle and operates during successive passes of the vehicle over a plurality of generally parallel arranged felled trees to crush or strip the branches from above and below the trunks.

3,828,836
SAFETY WHEEL AND TIRE SECURING ASSEMBLY

Curtis E. Bradley, 4517 Calle Ventura, Phoenix, Ariz. 85018

Filed Dec. 13, 1972, Ser. No. 314,538
Int. Cl. B60c 5/16, 7/24, 17/04
U.S. Cl. 152—158 **20 Claims**

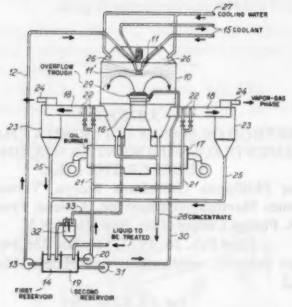
This specification discloses four basic embodiments of a safety wheel and tire assembly that is mounted on the rim of a conventional vehicle wheel. In each embodiment, a safety wheel is provided in the form of a two-part safety rim which is erected into a position in which the beads of the tire are clamped against the flanges of the wheel rim and a lubricated rolling surface is provided at a radius appreciably less than the radius of the tire when inflated. Mechanism is provided to adjust the safety rim into a position for installation and removal by applying lateral pressure to the side walls of the tire. Latches hold the safety rim in erected position and are released either by the lateral pressure aforesaid or by a tool that is inserted through a hole in the wheel rim that is normally closed by a removable plug.



3,828,837
APPARATUS FOR EVAPORATING LIQUID FROM A SOLUTION OR SUSPENSION

Jorgen Damgaard-Iversen, Birkerod; Ove Emil Hansen, Li Vaerlose, and Bjorn Lund, Frederiksberg, all of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark

Filed Sept. 11, 1972, Ser. No. 287,867
Claims priority, application Denmark, Sept. 10, 1971, 4465/71
Int. Cl. B01d 1/16
U.S. Cl. 159—4 R **9 Claims**

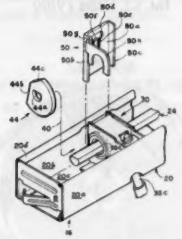


The present invention relates to evaporation of liquid from a solution or suspension in general and in particular to spray drying or spray concentrating. In such processes suspension or solution is sprayed into an evaporating or drying chamber to which heated drying gas is currently supplied, warm gas phase being simultaneously discharged from the evaporating or drying chamber through one or more discharge conduits or tubes. According to the invention solution or suspension is sprayed into at least one of the discharge tubes, for example by means of spraying or atomizing nozzles, liquid phase is separated from gas phase downstream of these nozzles, for example by means of cyclones, and the said solution or liquid being sprayed into the evaporating or drying chamber is the preconcentrated separated liquid phase. Thereby a two-step evaporation may be obtained by the use of a single evaporating or drying chamber.

3,828,838
VENETIAN BLIND HAVING TILT-LIMITING ATTACHMENT

Joseph A. Anderle, Clifton, and George Neira, Teaneck, both of N.J., assignors to Levolor Lorentzen, Inc., Hoboken, N.J.

Filed Mar. 8, 1973, Ser. No. 339,245
Int. Cl. D06h 9/26; E06b 9/307
U.S. Cl. 160—176 **9 Claims**



The head of the blind is provided with a two-part attachment which serves to limit the tilting movement of the slats. For a different limit of forward and/or backward tilt, one part of the attachment is replaced by a part which is similar but which establishes the different limit or limits.

3,828,839
PROCESS FOR PREPARING FIBER REINFORCED METAL COMPOSITE STRUCTURES

Ashok Kumar Dhingra, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 11, 1973, Ser. No. 350,128
Int. Cl. B22d 19/02
U.S. Cl. 164—97 **13 Claims**

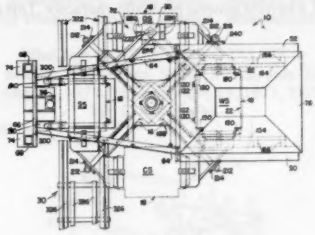
An economical process is disclosed for the preparation of strong composites of magnesium-containing metals reinforced with alumina-containing refractory oxide fibers. In the process alumina-containing fibers in a solid matrix of a soft, flexible organic polymer are loaded into a mold and the organic polymer is burned off. The remaining fibers are then aligned and uniformly distributed within the mold and the mold heated to about the temperature of the magnesium-containing metal to be used. Finally, the magnesium-containing metal is forced into the mold in a molten state by applying pressure. In this manner strong alumina fiber/magnesium-containing metal composites are formed which are useful as turbine blades, and structural beams and shafts, and the like.

3,828,840
CYCLICLY-OPERABLE MACHINE ADAPTED TO PRODUCE AND ASSEMBLE COPE AND DRAG MOLD PARTS

Robert S. Lund, Elmhurst, and Vernon J. Koss, Niles, both of Ill., assignors to Pettibone Corporation, Chicago, Ill.

Filed Mar. 10, 1972, Ser. No. 233,438
Int. Cl. B22c 15/28
U.S. Cl. 164—195 **18 Claims**

A cyclicly-operable molding machine for producing and assembling cope and drag mold parts. A rotary turntable which supports four pairs of flask sections is repeatedly indexed to move the pairs repeatedly and successively in a circular path through four stations, namely, (1) a working station where the flask sections are variously and automatically handled and in cooperation with a pattern-carrying match plate are filled and compacted with foundry sand so as to produce the two mold parts, (2) a core-setting station where, if required or desired, a core may be applied to one of the formed mold parts, (3) a stripping station wherein the flask sections are again variously handled to strip the sections from the mold parts and the latter are assembled and then deposited on a bottom board which is ejected from the machine, and (4) an idle or dwell station

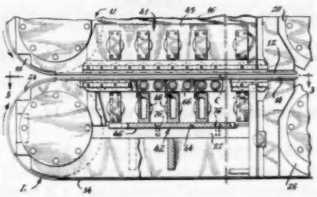


where an empty pair of flask sections awaits handling of a preceding pair of flask sections at the working station before being returned to such station for refilling thereof at the commencement of the next machine cycle.

3,828,841
TWIN-BELT METAL CASTING MACHINE HAVING REMOVABLE CORE ASSEMBLY INCLUDING COOLANT APPLICATORS AND BACK-UP ROLLERS

Robert William Hazelett, Winooski, and Robert J. Carmichael, Colchester, both of Vt., assignors to Hazelett Strip-Casting Corporation, Winooski, Vt.

Filed May 3, 1973, Ser. No. 356,726
Int. Cl. B22d 11/06
U.S. Cl. 164—278 **6 Claims**



A twin-belt continuous metal casting machine is described having a pair of removable core assemblies each comprising coolant applicators and back-up rollers for supporting and cooling the respective casting belts. These removable core assemblies are fitted into large open channels in the respective upper and lower belt carriages adjacent to the region in which the molten metal is solidified. The core assemblies are conveniently removable for inspection and maintenance, and they are pre-assembled separately from the machine to facilitate accurate assembly and alignment of the segmented finned back-up roller assemblies and coolant applicators which include rigid rectangular conduits serving as transverse stiffening beams in the core assemblies.

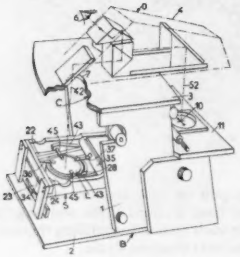
3,828,842
APPARATUS FOR FIXING MOUNTING MEANS ON SPECTACLE LENSES

Luc Andre Tagnon, Saint Mande, France, assignor to Essilor International, Paris, France

Filed Aug. 15, 1972, Ser. No. 280,800
Claims priority, application France, Aug. 25, 1971, 71.30817
Int. Cl. B22d 19/00
U.S. Cl. 164—334 **10 Claims**

This apparatus is intended for fixing to the convex surface of a spectacle lens, by casting, a metal block provided with

means for subsequently properly engaging same on the spindle of a trimming and/or bevelling machine, notably in the manufacture of ophthalmic lenses having complex optical characteristics, such as cylindrical, toroidal, multifoci lenses, as well as lenses having a gradually increasing optical power and, in addition, a certain general prismatic character. This apparatus



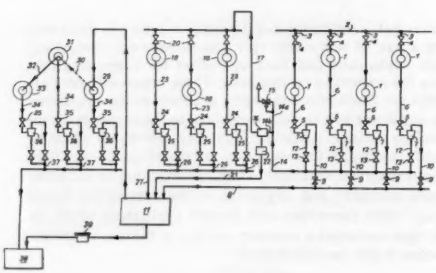
comprises essentially lens holding means, sighting means, and means for casting a low-melting metal for forming said block in which reference means are adapted to be engaged in and on said spindle with the assistance of a reference cross-line and sighting axes, whereby an automatic and accurate positioning of the lens in the trimming and/or bevelling machine is obtained.

3,828,843

PROCESS FOR HANDLING FLUIDS IN HEAT TRANSFER EQUIPMENT

Abraham C. Miselem Asfura, No. 60-22, Mexico 21 D.F., Mexico

Filed Jan. 9, 1973, Ser. No. 322,192
Claims priority, application Mexico, Aug. 14, 1972, 137744
Int. Cl. F28b *3/00*
U.S. Cl. 165—1 **11 Claims**



This invention provides a novel process of handling fluids which increase heat transfer efficiency in all types of heat transmission equipment. This process is applicable both to single and multiple units; in both cases, heat transfer is enhanced and steam consumption reduced.

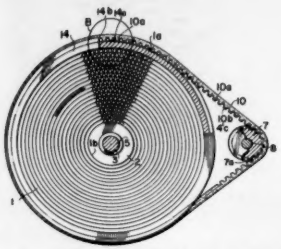
Basically, the process consists in extracting, along with the condensate, some of the steam from inside of a steam heated unit, separating this steam from the condensate and noncondensable gases, before and after feeding this extraction steam to another unit or group of units working at a lower pressure.

3,828,844

HEAT EXCHANGING APPARATUS

Masao Kitano, and Yasuo Kondo, both of Anjo, Japan, assignors to Nippondenso Co., Ltd., Aichi-ken; Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, all of, Japan

Filed Dec. 22, 1971, Ser. No. 210,786
Claims priority, application Japan, Dec. 26, 1970, 45-128992
Int. Cl. F28d *19/00*
U.S. Cl. 165—8 **3 Claims**



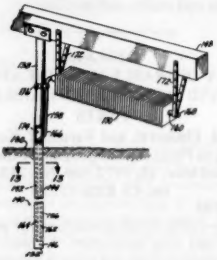
A heat exchanging apparatus having a disc-like body of a perforated material adapted to be rotated in heat transfer contact with fluid to be heat-exchanged. A driven ring secured to the outer peripheral surface of the disc-like body is driven by an endless belt which is driven by a gear wheel rotated with the teeth thereof being in meshing engagement with the teeth formed on the inner periphery of the endless belt. The latter is made of a resilient material whereby the variation in the rotational drive force of a power source and exterior vibration and shock are taken up by the resiliency of the belt for the stable and uniform rotation of said disc-like body and for the guard thereof against the exterior vibration and shock.

3,828,845

PERMAFROST STRUCTURAL SUPPORT WITH INTERNAL HEAT PIPE MEANS

Elmer D. Waters, Richland, Wash., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 174,687, Aug. 25, 1971. This application Mar. 30, 1973, Ser. No. 346,622
Int. Cl. F28d *15/00*
U.S. Cl. 165—45 **12 Claims**



Structural support assembly for use in arctic and subarctic (permafrost) areas or in any areas where the upper ground layer is subject to a severe annual freeze-thaw cycle, including the cooperative combination of a support structure and a heat pipe element installed in generally frozen soil. The heat pipe is of a suitably complementary configuration and/or disposition with respect to the support structure to provide appropriate

stabilization of the surrounding frozen soil. In one embodiment, the heat pipe element is disposed externally of the support structure and, in another embodiment, it is disposed internally of such structure. The external embodiment further includes one version employing a linear (straight) heat pipe element and another version employing an angular (helical) element. The internal embodiment further includes one version wherein a heat pipe is integrally combined with a support structure and another version wherein a heat pipe is cooperatively installed inside a support structure.

3,828,846

RADIATOR FOR CENTRAL HEATING

Edsger Wybe Van Dijk, Albert Neuhystraat 25, Utrecht, Netherlands

Filed July 23, 1973, Ser. No. 381,718
Int. Cl. F24h *9/02*
U.S. Cl. 165—49 **1 Claim**

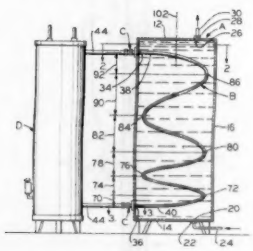
In a preferred embodiment, a series of parallel vertical steam-conducting pipes are covered on one side thereof with a metal contoured sheet of an area sufficient to be contoured to the profile of the pipes to an extent making possible the snapping-on of the sheet onto the pipes, together with top and bottom covers respectively to cover the tops and bottoms of the pipes to thereby substantially conceal them from view, and the metal sheet being connected to the respective pipes by heat-conducting metallic connectors.

3,828,847

HOT WATER HEATER

Robert E. Stein, North Royalton, Ohio, assignor to The Glass Lined Water Heater Co., Cleveland, Ohio

Filed Feb. 14, 1973, Ser. No. 332,260
Int. Cl. F28f *7/00*
U.S. Cl. 165—76 **3 Claims**



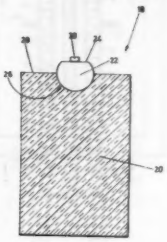
A hot water heater includes a substantially cylindrical upright tank having vertically-spaced upper and lower openings in its peripheral wall. A substantially helically coiled cylindrical conduit is threadable into the tank through the upper sidewall opening until its opposite end portions extend through the upper and lower sidewall openings. The helically coiled conduit is also threadable out through the upper sidewall opening for replacement. A hot liquid flows through the helically coiled conduit for heating water within the tank.

3,828,848

NOVEL DIAMOND PARTICLE PARTICULARLY FOR USE IN HEAT SINKS

Joseph Lambert Maria Custers, and Frederick Anton Raal, both of Johannesburg, South Africa, assignors to De Beers Industrial Diamond Division Limited, Johannesburg, South Africa

Filed July 21, 1972, Ser. No. 273,977
Claims priority, application South Africa, July 30, 1971, 71/5111; Aug. 24, 1971, 71/5666; Nov. 19, 1971, 71/7816
Int. Cl. H01l *1/12*
U.S. Cl. 165—80 **5 Claims**



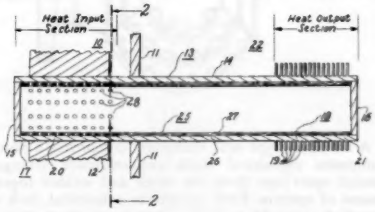
The invention provides a rounded diamond particle, which is preferably of the Type IIa, truncated by a single planar surface or by a planar surface at each of opposed poles. These particles find particular use in heat sinks for electronic devices, the heat sink consisting of a body of a metal of good heat conductivity such as copper and a truncated diamond particle in thermal contact with the body such that a planar surface is presented away from the body and thus able to make thermal contact with an electronic device.

3,828,849

HEAT TRANSFER DEVICE

James C. Corman, Scotia, and Gunnar E. Walmet, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 16, 1971, Ser. No. 124,806
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **4 Claims**

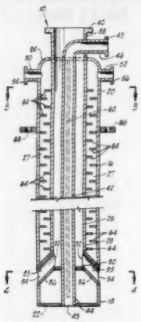


In a heat pipe, the portion of the wicking which supplies the evaporator section of the heat pipe with liquid is provided with a plurality of openings of relatively low impedance to vapor flow therethrough and extending orthogonally from the surface in contact with the heat input surface of the evaporator section to the opposing surface thereof to minimize vapor accumulation which blocks the flow of the liquid to the evaporator surface.

3,828,850
HIGH TEMPERATURE MATERIAL INTRODUCTION APPARATUS

Robert E. McMinn, and Mickey B. Jamison, both of Houston, Tex., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.

Filed July 12, 1973, Ser. No. 378,499
Int. Cl. F28f *13/12*
U.S. Cl. 165—109 6 Claims

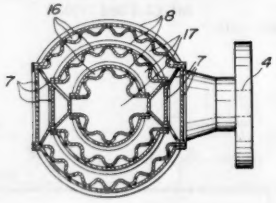


This invention relates to the introduction of various materials such as oxidizing agents into high temperature environments. More particularly, the invention is directed to improved apparatus for introducing two or more separate such materials into highly heated chambers or vessels such as metal refining furnaces, reactors, convertors and the like.

3,828,851
HEAT EXCHANGER

Kiyosumi Takayasu, No. 2 5-chome, Horita, Mizuho-ku, Nagoya, Japan

Filed May 31, 1973, Ser. No. 365,598
Claims priority, application Japan, June 20, 1972, 47-61469
Int. Cl. F28d *7/02*
U.S. Cl. 165—165 1 Claim

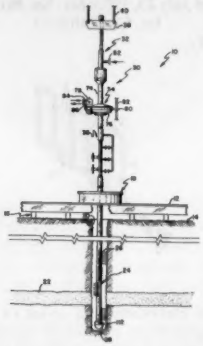


A multipass type heat exchanger comprising a plurality of composite cylindrical shells concentrically arranged and spaced apart one from the other and welded together by means of spacers. Each composite cylindrical shell is composed of a pair of trough shaped elements. Each element consists of two segments made integral into one body and one of these segments has a number of longitudinal ribs spaced apart one from the other and extending in a lengthwise direction throughout the total length of the segment and another segment has a number of peripheral ribs spaced apart one from the other and extending in a peripheral direction throughout total periphery of the segment. The latter segments surrounds the former segment to form a number of first elongate passages for hot or cold medium which is fed from a top opening of said composite cylindrical shells and flows downward to a base opening. The composite cylindrical shells are closed at their substantially upper and lower portions to form a plurality of second elongate passages for fluid to be heated or cooled which is fed from a lower side opening of said composite cylindrical shells and flows upward to an upper diametrically opposite side opening.

3,828,852
APPARATUS FOR CEMENTING WELL BORE CASING

Charles G. Delano, 430 Sharon, Corpus Christi, Tex. 78412

Division of Ser. No. 251,191, May 8, 1972, Pat. No. 3,777,819.
This application Nov. 30, 1973, Ser. No. 420,676
Int. Cl. E21b *33/05*
U.S. Cl. 166—78 4 Claims

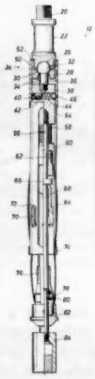


There is disclosed an apparatus for cementing a tubular string in a well bore wherein the tubular string is simultaneously rotated and reciprocated while passing a cementing slurry into the well bore.

3,828,853
KICK-OVER TOOL

William C. Neal, Rt. 2, Box 23 B, Cut Off, La. 70345

Filed Mar. 5, 1973, Ser. No. 338,105
Int. Cl. E21b *7/06*
U.S. Cl. 166—117.5 9 Claims



For use with a setting tool or a retrieval tool in installing or removing gas lift valves in side pockets of a gas lift well, a kick-over tool which incorporates a knuckle capable of rotating the

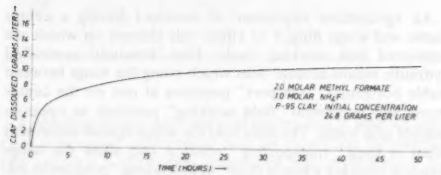
tool and a sleeve which slides over the knuckle to lock the knuckle in a straight position. The sleeve locks a set of bow springs against deflection. Means are included to enable the tool to function on upward movement whereby the sleeve is moved downwardly. When it is moved downwardly, the knuckle is freed to rotate and four bow springs expand. The bow springs contact the inner wall and find the side pocket causing the lower portions of the kick-over tool to extend into the side pocket, thereby positioning the attached apparatus for installation or retrieval of the gas lift valve.

3,828,854

DISSOLVING SILICEOUS MATERIALS WITH SELF-ACIDIFYING LIQUID

Charles C. Templeton; Evan H. Street, Jr., and Edwin A. Richardson, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 351,739, April 16, 1973, abandoned. This application Oct. 30, 1973, Ser. No. 411,132
Int. Cl. E21b *43/27*
U.S. Cl. 166—307 **20 Claims**



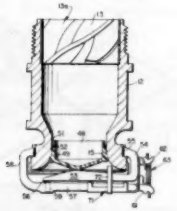
Siliceous materials in or around a well are dissolved by contacting them with a self-acidifying aqueous liquid system comprising an aqueous solution of at least one water-soluble fluoride salt mixed with a relatively slowly-reactive acid-yielding material that subsequently converts the salt solution to a hydrofluoric acid solution that has a relatively high pH but is capable of dissolving siliceous material.

3,828,855

FIRE EXTINGUISHING SYSTEM NOZZLE

Richard V. Woodward, and Richard A. McMahon, both of Pittsburgh, Pa., assignors to Factory Mutual Research Corporation, Norwood, Mass.

Filed Jan. 19, 1973, Ser. No. 324,981
Int. Cl. A62c *37/12*
U.S. Cl. 169—40 **17 Claims**



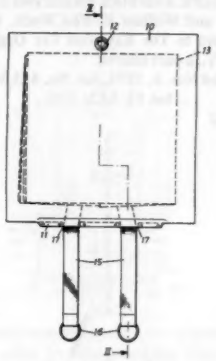
The discharge outlet plug of a fire extinguishant nozzle is retained by an external lever system that is conditioned by the operation of a heat fusible means in response to the presence of a first temperature rise to permit release of the plug under fluid pressure in the nozzle. Holding mechanism preferably associated with the lever system is provided to prevent release of the plug unless the nozzle fluid pressure exceeds a predetermined pressure floor, and a temperature responsive override arrangement associated with the lever system is provided to disable the holding mechanism in the presence of a materially higher temperature rise to permit the plug to be expelled by fluid pressures below the pressure floor.

3,828,856

FIRE BLANKET PACK

Norman William Henry Wallis, Old Preston House, Dorset, England

Filed July 31, 1972, Ser. No. 276,406
Int. Cl. A62c *7/00*
U.S. Cl. 169—50 **7 Claims**



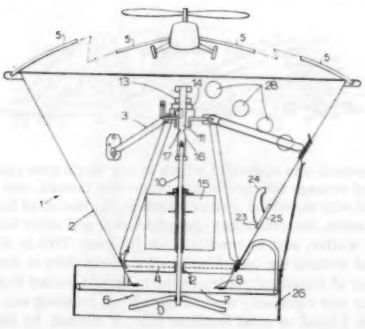
A fire-blanket pack comprising a fire-resistant blanket inside a polygonally-shaped closed container or bag. The latter is openable along one edge which has strip means provided with apertures attached thereto. The strip means have releasable snap-fastening means closing the container along said one edge. The blanket has handling tapes sewn to it at spaced locations close to one edge thereof so as to project obliquely from the blanket and extend through said apertures externally of the bag or container. The externally projecting portions of the tape are pullable to open the container along said one edge and release the fire-resistant blanket.

3,828,857

APPARATUS FOR FILLING AND EMPTYING CONTAINERS FOR USE IN FIREFIGHTING

Athol James Malcolm Mason, 6 Ingle Ave., Box 298, Taupo, New Zealand

Filed Dec. 7, 1971, Ser. No. 205,507
Int. Cl. A62c *9/00*
U.S. Cl. 169—53 **22 Claims**



A container which may be filled by immersing the lower portion thereof into a fluid and allowing the fluid to enter the

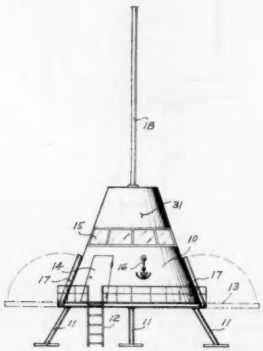
container through a main valve and a number of one-way secondary valves in this lower portion. The main valve is connected to a float which closes the valve when a predetermined level of fluid has entered the container. The secondary valves are closed by the action of the fluid when the container is raised from the reservoir of fluid. The main valve is held closed by a latch mechanism which may be tripped from a remote station allowing the valve to open and discharge the fluid from the container.

3,828,858

FIRE ESCAPE AND FIRE FIGHTING CAPSULE

Calvin Richter, and William E. Van Wyck, both of Fresno, Calif., assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 6, 1973, Ser. No. 413,360
Int. Cl. A62c *3/00*
U.S. Cl. 169—62 **4 Claims**



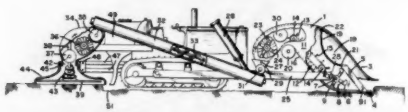
A fire fighting and fire escape capsule which is tied to a helicopter for air delivery to the site of a fire in a forest, skyscraper building or other inaccessible location. The unit is in the form of an enclosed housing supplied by an attached umbilical cable with air fire retardant materials, electricity and other support items.

3,828,859

METHOD AND APPARATUS FOR PROCESSING SOIL FOR PLANTING

Guillermo Diaz Alvarez, Netcong, N.J., assignor to Gee-Dee International, Inc., Rockaway, N.J.

Filed June 27, 1972, Ser. No. 266,714
Int. Cl. A01b *49/02*
U.S. Cl. 172—50 **41 Claims**



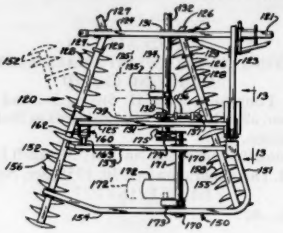
A method and apparatus which in one single pass can take cleared acreage whether or not previously farmed, and leave the soil with improved texture, substantially free of all harmful weed seeds, insects, insect eggs and larvae and other harmful living matter, and in condition for planting. This is accomplished without the use of herbicides, insecticides or the like. A layer of topsoil of predetermined depth is peeled from the surface and vigorously worked by milling, crushing and other means. Liquid or solid fertilizer may, if desired, be blended into the soil. Seeds may be planted, and the treated soil redistributed to cover them to a preselected depth, all in the one pass.

3,828,860

AGRICULTURAL IMPLEMENT WITH FOLDABLE WINGS

Robert L. Poland, Kewanee, Ill., assignor to Kewanne Machinery & Conveyor Co., A Division of Chromalloy American Corporation, Kewannee, Ill.

Filed Feb. 28, 1973, Ser. No. 336,897
Int. Cl. A01b *49/00*
U.S. Cl. 172—311 **15 Claims**



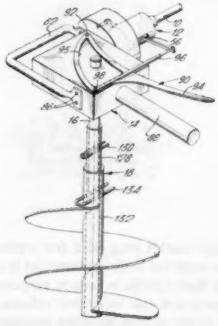
An agricultural implement is disclosed having a center frame and wings hinged to either side thereof on which are supported soil working tools. First remotely controlled hydraulic means actuate links which swing the wings between stable horizontal "transport" positions at rest on the center frame and horizontal "field working" positions to opposite sides of said frame. The links hold the wings against movement when in their "transporting" position and allow the wings freedom to swing when in their "field working" position to follow the contour of the field over which the implement is moved. Further hydraulic means operate other linkages which include screw-threaded swivel links on or by the axes about which the wings swing to interconnect the soil working tools and/or pivotally mounted wheels on the wings with those on the center frame so that the tools on the wings move into their working positions with corresponding movement of the tools on the center frame under the remotely controlled operation of the further hydraulic means.

3,828,861

ICE AUGER WITH SLIP CLUTCH IN DRIVE

Steven M. Verkuil, 350 Sunny Crescent, Box 1895, Schefferville, Quebec, Canada

Filed Jan. 11, 1973, Ser. No. 322,706
Claims priority, application Canada, Jan. 26, 1972, 133237
Int. Cl. F25c *5/04*
U.S. Cl. 173—26 **10 Claims**



A portable ice auger for use with snow vehicles is provided having a slip clutch in the auger head and a clutch control lever adjacent a clutch handle for control of the clutch slip by an auger operator, during operation of the auger.

3,828,862
TRAVELLING OVERHEAD CARRIAGE MINING MACHINE WITH ARTICULATED, TOOL CARRYING BOOM

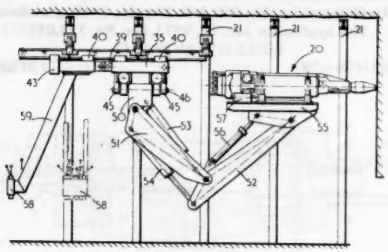
Kenneth Hazelton Dabell, Great Longstone, and Raymond Jeffrey Phillips, Darley Dale, both of England, assignors to Lemand Engineering Limited, Matlock, Derbyshire, England

Filed Sept. 21, 1972, Ser. No. 291,150

Claims priority, application Great Britain, Sept. 22, 1971, 44134/71; July 15, 1972, 33245/72

Int. Cl. E01q *3/03*

U.S. Cl. 173—43 **11 Claims**



A handling device such as a coal cutting tool in which a carriage is mounted on overhead rails for movement therealong and supports a depending articulated arm arrangement to which can be secured a tool such as an impact hammer. Means is provided for moving the articulated arm and hammer transversely, forwardly, upwardly and downwardly.

3,828,863
COMBINED PORTABLE ELECTRIC IMPACT WRENCH AND CHIPPING HAMMER

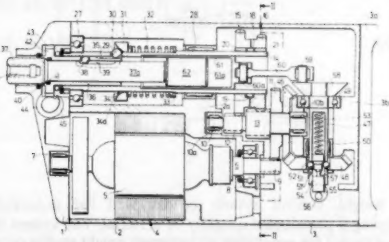
Manfred Bleicher, Leinfelden; Jorg Falchle, Bempflingen; Reinhard Hahner, Kemnat; Gernot Hansel, Stuttgart-Plieningen; Wolfgang Schmid, Plattenhardt, and Karl Wanner, Echterdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 6, 1973, Ser. No. 376,935

Claims priority, application Germany, Aug. 31, 1972, 2242944

Int. Cl. E02d *7/02*; **E21b** *5/00*; **E21c** *3/02*

U.S. Cl. 173—48 **26 Claims**



A combined portable electric impact wrench and chipping hammer wherein the tool holder is movable axially by a pneumatic impeller which receives motion from the output shaft of an electric motor by way of a first transmission and a clutch which latter can be disengaged at the will of the user, and wherein the tool holder is rotatable by way of a multi-speed second transmission having a neutral position. By placing the second transmission in neutral position, the user can reciprocate the tool holder by way of the first transmission when the clutch is engaged. When the clutch is disengaged, the user can rotate the tool holder at one of several speeds by way of the second transmission. The second transmission can drive the tool holder at a selected speed while the clutch is engaged so that the tool holder moves axially and rotates about its axis. The second transmission embodies or is combined with a safety clutch which is disengaged when the tool holder offers excessive resistance to rotation.

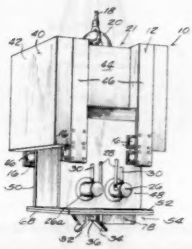
3,828,864
PILE DRIVER AND EXTRACTOR

Edwin Haverkamp, Grandville, and George J. Morren, Zeeland, both of Mich., assignors to H & M Vibro, Inc., Grandville, Mich.

Filed Feb. 26, 1973, Ser. No. 335,443

Int. Cl. E02d *7/06, 7/18*

U.S. Cl. 173—49 **17 Claims**



First and second support frames are detachably interconnected to each other by rubber torsion discs which permit resilient damping movement between the two frames. A bias weight is attached to the first frame and an eccentric weight is rotatably mounted to the second frame and driven by a hydraulic motor to develop vibratory motion. The second frame also includes first and second jaws for clamping the piling therebetween. The device is cable suspended by a crane attached to the first frame and is insulated from the vibratory motion by the torsion discs. Preferably, two eccentric weights are driven about separate shafts in counter-relative rotation synchronized out of phase to exert uniaxial vibratory force on the piling while cancelling lateral forces.

3,828,865
HAMMER DRILL

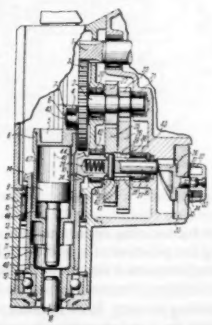
Albrecht Schnizler, Jr., Nurtingen, Germany, assignor to Metabowerke K.G., Closs, Rauch & Schnizler, Nurtingen, Germany

Filed July 29, 1970, Ser. No. 64,889

Claims priority, application Germany, July 30, 1969, 1938660

Int. Cl. B25d *11/00*

U.S. Cl. 173—104 **14 Claims**



A percussion or hammer drill with a gear unit which is preferably driven by an electric motor and permits the ratio

between the speed of rotation of the drilling tool and the frequency of the impacts of the striker upon this tool to be varied.

3,828,866

IMPULSE DRIVING APPARATUS

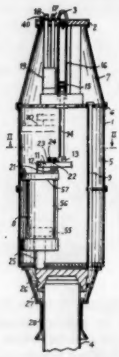
Joost Werner Jansz, The Hague, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk Z.h., Netherlands

Filed Aug. 14, 1972, Ser. No. 280,412

Claims priority, application Great Britain, Sept. 9, 1971, 42192/71

Int. Cl. E02d 7/10

U.S. Cl. 173—101 **7 Claims**



An impulse driving apparatus, for use for example in pile driving, in which a plurality of striker members are released from a given height above an object to which impulses are to be given in such a way that the stricker members deliver impulses to the object either simultaneously or at pre-determined intervals of time.

3,828,867

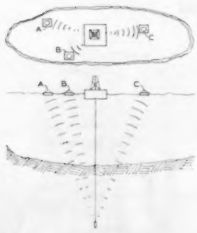
LOW FREQUENCY DRILL BIT APPARATUS AND METHOD OF LOCATING THE POSITION OF THE DRILL HEAD BELOW THE SURFACE OF THE EARTH

Albert A. Elwood, P.O. Box 10592, Riviera Beach, Fla. 33404

Filed May 15, 1972, Ser. No. 253,544

Int. Cl. E21b 47/024

U.S. Cl. 175—45 **7 Claims**



An earth drill bit locating apparatus and method of detecting and locating the position of a drill bit below the surface of the earth utilizing very low frequency electromagnetic energy. The apparatus includes a transmitter located adjacent the drill bit for transmitting a very low-frequency electromagnetic wave below 5,000 Hz and a plurality of receivers including antennae placed adjacent to the earth's surface for detecting the low-frequency wave and computing the position of the drill bit by triangulation. Each receiver is a directional indicating receiving means for obtaining raw data in order to display and plot the movement of the drill head as it moves into the earth. The transmitter is powered by an alternator driven by a turbine in the mud supply conduit or collar just above the bit. The drill collar is fitted with electrodes or wire loops which are connected to the transmitter output to cause the drill collar to act as an electric or magnetic radiating dipole.

3,828,868

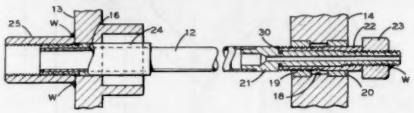
FUEL ASSEMBLY FOR A NUCLEAR REACTOR

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Continuation of Ser. No. 880,267, Nov. 26, 1969, abandoned. This application Jan. 12, 1973, Ser. No. 323,015

Int. Cl. G21c 3/14, 7/12

U.S. Cl. 176—78 **2 Claims**



A nuclear reactor fuel assembly in which both fuel rods and control rod guide tubes are held in a predetermined parallel spacing relation by a pair of spaced end grids. The guide tubes are secured to the end grids by releaseable connection means that allow the tubes to be installed and individually replaced with the fuel rods already installed in the assembly.

3,828,869

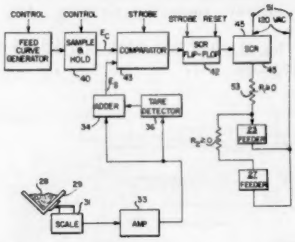
WEIGHT CONTROL SYSTEM

Kenneth W. Sellers, Dallas, Tex., assignor to Frito-Lay Inc., Dallas, Tex.

Filed Aug. 30, 1972, Ser. No. 284,708

Int. Cl. G01g 19/52

U.S. Cl. 177—50 **8 Claims**



A weight control system is disclosed for accurately dispensing a preselected quantity of material. The system include a circuit for generating an optimum weight profile curve which represents the desired quantity of material in terms of net weight to be dispensed with respect to time. The curve is an exponentially increasing function of time having a rate of increase that progressively decreases so that the curve approaches an asymptotic level which represents the total net weight of the material to be dispensed. The curve is segmented into small time intervals, and at each interval the weight of the material dispensed is compared with the optimum weight defined by the curve. Depending on whether the accumulated weight of the material dispensed at each time interval is greater or less than the optimum weight, a circuit is enabled

for conducting current to one or more material feeders which in turn dispense the material into a charge hopper.

A circuit is provided which detects a change in the tare weight of a scale due to the accumulation of foreign materials on the scale. The circuit automatically compensates for these accumulations which would otherwise cause an undesirable variance in the weight of the charge of material.

3,828,870

SCALE

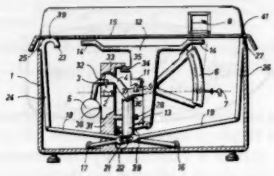
Josef Schwarz, Balingen/Wurtt, Germany, assignor to Bizerba-Werke Wilhelm Kraut KG, Balingen/Wurtt, Germany

Filed Aug. 24, 1973, Ser. No. 391,290

Claims priority, application Germany, Aug. 30, 1972, 2242570

Int. Cl. G01g *23/02*

U.S. Cl. 177—155 **4 Claims**



A scale has a housing and an indicating mechanism in the housing, and a weighing platform outside the housing. A movable balance arm connects the platform with the mechanism. The platform is removably connected with the arm so that it can be taken off the same. An arresting arrangement is provided for the arm and is so arranged in the interior of the housing that it can engage the arm or be disengaged from the same, only when the platform is removed from the arm.

3,828,871

TRACTOR-SET RESULTING FROM THE COUPLING OF A TRACTOR TO A STRADDLE TRACTOR, ABLE TO BE DRIVEN BY A SINGLE DRIVER

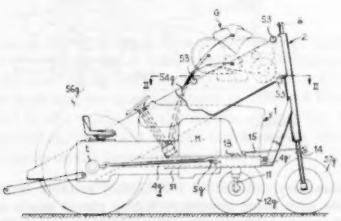
Emile Bobard, 17, Rue de Reon, Beaune, France

Filed May 25, 1972, Ser. No. 256,951

Claims priority, application France, May 27, 1971, 71.19405; Dec. 10, 1971, 71.44578; Dec. 13, 1971, 71.44769; Dec. 20, 1971, 71.45813

Int. Cl. B62d *49/00*

U.S. Cl. 180—1 F **8 Claims**



The disclosure of the present invention is a set resulting from the coupling of two tractors each comprising a frame equipped with an engine, driving and steering means, and each carried by four wheels of which two at least are drive wheels and two at least are steerable wheels. One of the two tractors is a relatively low and narrow tractor which is covered by a straddle tractor sufficiently high and wide for such covering. Means are provided to ensure the driving and steering of this set from a single driving post.

3,828,872

VEHICLE FOR USE ON SNOW, ICE OR THE LIKE

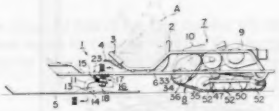
Toshio Tsuchiya, Ooi, and Atsushi Abe, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 339,006

Claims priority, application Japan, Mar. 8, 1972, 47-23741

Int. Cl. B62m *27/00*

U.S. Cl. 180—5 R **1 Claim**



A pleasure vehicle comprised of a sleighed, front riding portion and an endless tracked rear drive portion and steerable by the rider's bodily movement to shift his own weight right and left relative to his seat. It is particularly attractive to the rider for the driving technique required. Also, it can run with a substantial stability irrespective of the irregularities of the snow, ice or the like surface.

3,828,873

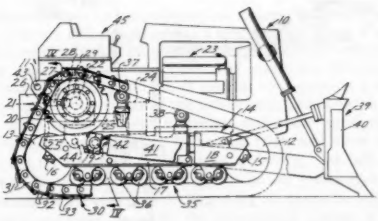
HIGH DRIVE-TRACK-TYPE VEHICLE

Eldon D. Oestmann, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 28, 1972, Ser. No. 283,968

Int. Cl. B62d *55/12*

U.S. Cl. 180—9.5 **20 Claims**



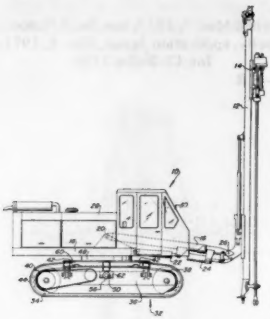
A track-type vehicle comprises a main frame having a pair of longitudinally spaced idlers rotatably mounted on each side thereof. A drive sprocket is rotatably mounted directly on the frame, between each pair of idlers. Each drive sprocket is positioned vertically above and substantially closer to a first idler of each pair of idlers than to a second idler thereof. A triangularly shaped endless track assembly is entrained about each repective drive sprocket and pair of idlers and a bogey system is mounted on the frame to engage the track assembly, between the idlers.

3,828,874

CRAWLER UNDERCARRIAGE

Malcolm N. Council, Richardson, Tex., assignor to Gardner-Denver Company, Quincy, Ill.

Continuation of Ser. No. 100,228, Dec. 21, 1970, abandoned.
This application Oct. 27, 1972, Ser. No. 301,701
Int. Cl. B62d *55/10*
U.S. Cl. 180—9.6 3 Claims



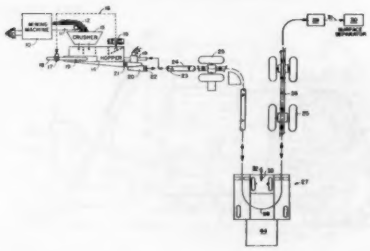
A crawler undercarriage for a mobile rock drill unit or the like comprising spaced apart parallel crawler assemblies having crawler frames which are pivotally interconnected by a transverse axle located substantially midway the length of the crawler frames. A pair of transverse equalizer beams substantially equally spaced on each side of the transverse axle are pivotally connected to the crawler frames and to a main support platform for the rock drill unit by means of spherical self-aligning bearings.

3,828,875

HYDRAULIC CONTROL APPARATUS FOR A MOBILE SLURRY HANDLING SYSTEM

James H. Tarter, Royal Oak, Mich., assignor to Continental Oil Company, Ponca City, Okla.

Filed Dec. 29, 1972, Ser. No. 319,828
Int. Cl. B62d *59/00*
U.S. Cl. 180—14 A 3 Claims



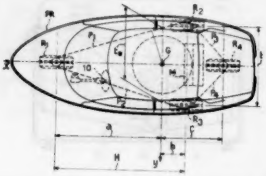
A hydraulic control apparatus for a slurry hose transportation system consisting of one or more powered carts and one or more unpowered carts where the powered carts include a propulsion system such as wheels which are driven by hydraulic motors. An electric motor provides power for a hydraulic pump which is coupled through a first system to one set of hydraulic motor ports and through a second system to the second set of hydraulic motor ports. Each of the first and second systems includes a check valve and a flow sensing valve parallelly coupled therein. The hydraulic pump can pass hydraulic fluid under pressure through either the first or the second system, causing the motors to rotate in one direction or the other. A hydraulically operated piston may also be coupled across the flow sensing valve so that, when the pressure increases on the flow sensing valve, the piston will move, transferring a mechanical output to a second powered cart, commanding the second powered cart to follow in the same direction as the first-mentioned powered cart.

3,828,876

MOTOR VEHICLE HAVING WHEELS IN A DIAMOND PATTERN

Alberto Morelli, Strada Va Salice 72, Turin, Italy

Filed Oct. 5, 1972, Ser. No. 295,327
Claims priority, application Italy, Oct. 8, 1971, 70311/71
Int. Cl. B62d *61/04*
U.S. Cl. 180—21 4 Claims



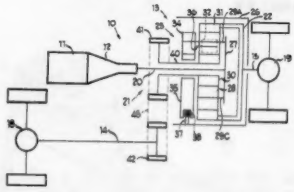
This invention relates to a motor vehicle with a rhomboidal or diamond configuration of road wheels, with a front steerable wheel, two driven side wheels and a free-wheeling rear wheel with a non-steering axis. For good stability the ratio of the distance from the centre of gravity of the vehicle of the rear and side wheels is between 1.5 and 3, and the ratio between the inter-axis distance of the front and side wheels and the distance between said centre of gravity and the front wheel is between 1.225 and 1.66.

3,828,877

DIFFERENTIAL FOR FOUR-WHEEL DRIVE

Mark J. Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 18, 1973, Ser. No. 380,443
Int. Cl. B60k *17/30*
U.S. Cl. 180—44 R 15 Claims



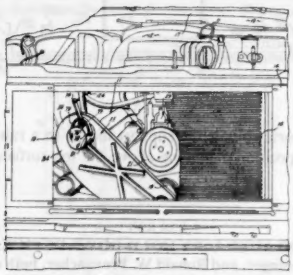
A planetary differential mechanism suitable for use in a multiple path drive system including planet gears, a pair of gear elements, and a locking gear which meshes with a planet gear. The differential is arranged such that during normal operation one of the gear elements normally overspeeds the other and the locking gear is held out of engagement with either of said gear elements permitting differentiation between them, but when the normally overspeeding gear element overspeeds the normally overspeeding gear element, the locking gear is caused to mesh with one of the gear elements and prevents differentiation between the gear elements.

3,828,878

VEHICLE POWER TAKE-OFF ASSEMBLY

George S. Clapsaddle, Jr., Conrad, Iowa, assignor to Clapsaddle Sales and Service Inc., Whitten, Iowa

Filed Jan. 22, 1973, Ser. No. 325,365
Int. Cl. B60k *25/02*
U.S. Cl. 180—53 FE 4 Claims



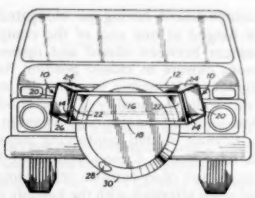
The power take-off assembly is compact and adapted for installation on the front end of a vehicle engine and within the engine compartment. The assembly is directly connected to the engine crankshaft and includes a driven rotary power unit, such as a hydraulic pump, the operation of which is controlled independently of and without interruption of engine operation.

3,828,879

SPARE TIRE MOUNTED, MOTOR VEHICLE RADIATOR COOLING APPARATUS

Fred W. Harkey, and Thelma F. Harkey, both of 333-32nd Ave., Longview, Wash. 98632

Filed Mar. 16, 1973, Ser. No. 342,188
Int. Cl. B60k *11/02*
U.S. Cl. 180—54 A 6 Claims



Apparatus for directing a flow of cooling air against the radiator of a moving motor vehicle vertically mounting a spare tire at the front of the vehicle across the radiator face comprises at least one air scoop arranged to deflect a flow of air generated by the motor of the vehicle against the radiator face behind the tire, and means for mounting the scoop gravitationally on the upper portion of the tire.

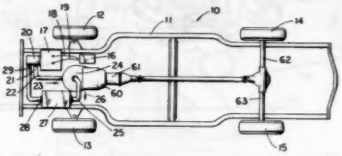
3,828,880

VEHICLE POWER SYSTEM

William H. Smith, 532 W. Washington, Sullivan, Ind. 47882

Filed Aug. 27, 1973, Ser. No. 391,743
Int. Cl. B60k *3/04*
U.S. Cl. 180—66 R 9 Claims

A power system for propelling a vehicle. The vehicle includes a source of electrical energy connected to a motor which powers a liquid pump. The pump forces liquid from a central source through at least one nozzle which directs the pressurized liquid against concave fins of a turbine wheel. A generator for recharging the source of electrical energy includes a second turbine wheel with concave fins located adjacent the concave fins of the first turbine wheel to receive the pressurized liquid forced through the first turbine wheel fins. A sump pump returns the liquid to the central source.

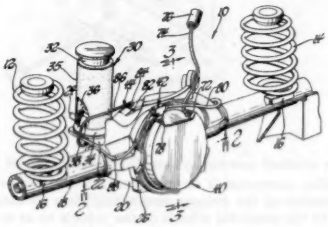


3,828,881

ANNULAR DESSICANT TANK FOR AIR LEVELING SYSTEMS

Robert E. Owen, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1972, Ser. No. 310,777
Int. Cl. B60k *23/00*
U.S. Cl. 180—75 2 Claims



A dryer system for a pressurized air system on a motor vehicle includes a differential having a rear housing which is normally cold at vehicle start-up and which is heated by operation of the vehicle through heat generated within the differential mechanism. A dessicant tank of annular configuration is supported on the rear cover of the differential. Dessicant in the tank dries air to prevent freeze-up within the pressurized system during cold weather. It receives heat from warm axle oil to dry the dessicant during highway driving. The tank fits between an inlet filter and a fitting on the low pressure or the return side of the system to dry incoming air and to be purged by warm outgoing air when the pressurized system is exhausted thereby to regenerate the system.

3,828,882

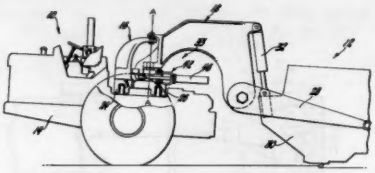
STEERING MECHANISM FOR ARTICULATED VEHICLE

Edward J. Biskup, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 24, 1973, Ser. No. 391,492
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 B 3 Claims

A steering mechanism for an articulated vehicle including first and second frame sections between which a pair of

hydraulic steering cylinders extend that are connected to the frame sections by pivotal connections located on a common circle. The mechanism is provided with steering cylinder stabilizing means formed integrally with the two frame sections of the vehicle.



3,828,883

ASSISTED STEERING CONTROL WITH AUTOMATIC RETURN, ESPECIALLY FOR AUTOMOBILE VEHICLES

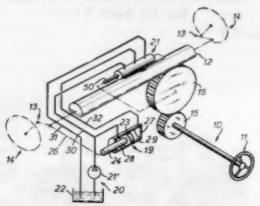
Michel Rist, Boulogne, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed June 14, 1973, Ser. No. 369,908

Claims priority, application France, June 22, 1972, 72.22498

Int. Cl. B62d 5/06

U.S. Cl. 180—79.2 R **11 Claims**



An assisted control system for the steering of automotive vehicles, comprises a steering column, a detector responsive to rotation of the column and acting on a toothed rack coupled to the steerable wheels of the vehicle so as to modify the turning angle of the wheels by the movement of the rack, and a double acting hydraulic jack system acting on the rack in either direction. A distribution device actuated by the detector is interposed between the jack system and a controlling source of energy comprising a hydraulic power station. The distribution device comprises an assistance element controlled by the detector and a centering device which brings the assistance element into a mean position of rest, and a restoring element controlled by an operating member responsive to a modification of the turning angle and comprising a reversing device ensuring a reversal of the direction of actuation of the jack system after the return of the assistance element to its position of rest. Both the assistance element and the restoring element of the distribution device comprise gating passages successively interposed between the hydraulic station and the jack system.

3,828,884

LOW PROFILE TRANSPORTER

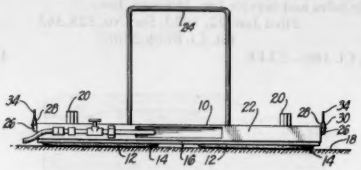
Robert E. Burdick, Santa Barbara, Calif., assignor to Rolair Systems, Inc., Santa Barbara, Calif.

Filed Dec. 1, 1972, Ser. No. 311,293

Int. Cl. B65g 7/06

U.S. Cl. 180—125 **2 Claims**

A transporter movable on an inflatable air bearing member and having a pair of load engagement support blocks positioned on opposite sides of the transporter below the top surface thereof. A control arm extending from the rearward end of the transporter pivots the support blocks to a raised load engagement position extending above the top surface of the transporter.



3,828,885

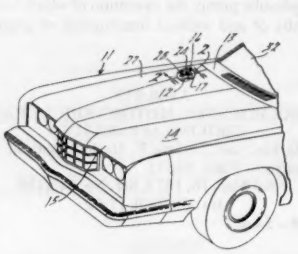
HOOD AUXILIARY HOLD-DOWN DEVICE

Ramon C. Eissinger, and Ronald W. Provancher, both of Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 18, 1973, Ser. No. 352,396

Int. Cl. B62d 25/10

U.S. Cl. 180—69 C **4 Claims**



A vehicle compartment having an elongated closure or hood structure hinged at one end of the compartment for swinging movement between closed and opened positions. The compartment closure in closed position has side edge means in contiguous relationship to side edge means of the compartment side walls. A plurality of large headed studs per side are mounted on one of the side edge means in cooperative relationship to keyhole slotted reinforcing members on the contiguous side edge means. Upon longitudinal displacement of the closure as a result of an endwise vehicle impact or collision, the headed studs interlock with the keyhole slotted members. This provides a strong holddown force effective to minimize the extent of possible longitudinal displacement of the closure.

3,828,886

GEOPHYSICAL EXPLORATION APPARATUS

William P. Holloway, deceased, late of Austin, Tex. (by Frances F. Holloway, executrix)

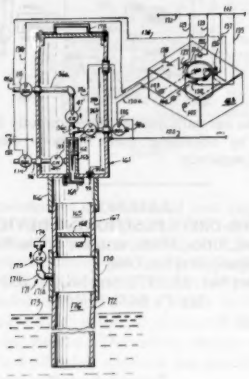
Continuation-in-part of Ser. No. 354,358, Sept. 3, 1964, abandoned, and a continuation-in-part of Ser. No. 504,529, Oct. 24, 1965, abandoned, and a continuation-in-part of Ser. No. 552,668, May 2, 1966, abandoned, and a continuation-in-part of Ser. No. 842,814, July 7, 1969, Pat. No. 3,623,570. This application Nov. 29, 1971, Ser. No. 202,889

Int. Cl. G01v 1/00

U.S. Cl. 181—.5 NC **7 Claims**

The disclosure is to geophysical exploration apparatus most importantly directed to apparatus comprising a detonator providing an upper chamber into which a fuel and a com-

bustion supporting gas together may be admitted, an ignition means being provided to ignite the mixture in the upper chamber, the explosion or combustion products being urged through restriction means provided between the upper chamber and a lower chamber, which has at least its lower end under water at the time of ignition and combustion. As the products of combustion are first urged through the restriction or escape passage means into the lower chamber to expand and pass downwardly through the water in and/or below the



lower chamber, a check valve provided to communicate with the interior of the lower chamber below the escape passage or restriction means first remains closed to open as the pressure falls to permit air to be drawn into the lower chamber so that vacuum does not result therein following the blast. A means is also provided to admit a purge gas into the upper chamber to purge any residual products of combustion downwardly through the escape passage or restriction means.

3,828,887

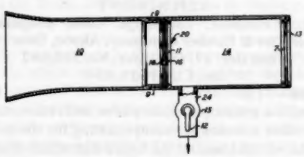
UNDERWATER SPEAKING DEVICE

David Ord Alexander, Washington, D.C., assignor to Sol B. Wiezer, Washington, D.C., a part interest

Continuation of Ser. No. 731,774, May 24, 1968, abandoned. This application Sept. 10, 1969, Ser. No. 860,154

Int. Cl. H04b *13/02*

U.S. Cl. 181—126 **10 Claims**



An underwater speaking tube employs a free-flooding speaking section which fits over the speaker's mouth. A venting tube to expel water is separated by a sound-transferring diaphragm from a sound distribution section.

3,828,888

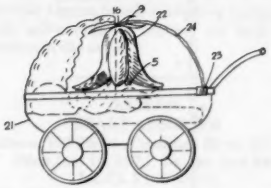
PLASTIC FOAM BELL FOR A BABY CARRIAGE

Charlotte H. Gottschalk, Aldergrove, B.C., Canada, assignor to The Raymond Lee Organization Inc., New York, N.Y., a part interest

Filed Aug. 15, 1973, Ser. No. 388,605

Int. Cl. E04b *1/84*

U.S. Cl. 181—33 R **3 Claims**



A bell-shaped plastic foam device with miniature bells which is attached to a flexible rod connected to the side of a baby carriage for hanging over the carriage. This device simultaneously amuses the baby while muffling the noise of a crying baby.

3,828,889

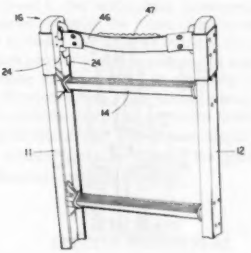
MULTIPLE ACCESSORY ATTACHMENT FOR LADDERS

Roger P. Rehm, Orrville, Ohio, assignor to Bauer Corporation, Wooster, Ohio

Filed Sept. 13, 1973, Ser. No. 396,825

Int. Cl. E06c *7/42, 1/36*

U.S. Cl. 182—107 **23 Claims**



Top end caps are fixed to side rails of a ladder, each end cap having a pair of linearly aligned longitudinal slots therein, each slot having a closed upper end and an enlarged entrance at its lower end. A spring loaded latch is provided at the entrance of the lower slot and normally closes the entrance, but is resiliently deflectable to open the lower slot entrance and admit the lug of an accesssory, to thereupon return to closing position and preclude separation of the accessory from the cap assembly. Various accessories are provided with end lugs and shafts extending therefrom and spanning the space between side rails by rigid or flexible means, to facilitate various types of positioning of the upper ends of ladders.

3,828,890

CABLE LUBRICATING DEVICE

Roger A. Schott, 13559 Rutland, Detroit, Mich. 48227, and Lawrence A. Schott, 15940 Warwick, Detroit, Mich. 48223

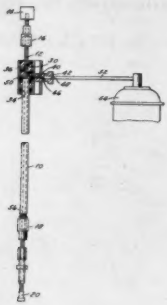
Filed Mar. 14, 1973, Ser. No. 341,168

Int. Cl. F16n *7/00*

U.S. Cl. 184—15 R **3 Claims**

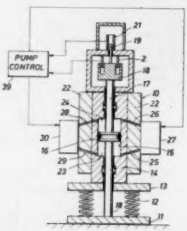
A lubricating fixture for sheathed slide cables which is readily attached and removed in a manner to seal one end of a

sheath and the adjacent cable. The fixture has an opening for receiving lubricant under pressure wherein lubricant may be



forced through the sheath around the cable to flush out foreign matter while supplying the necessary lubricant.

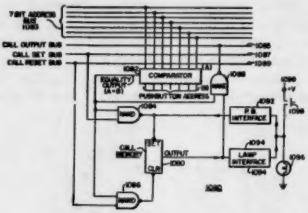
3,828,891
SEISMIC PULSE GENERATOR
Elmer Eisner, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 27, 1972, Ser. No. 318,811
Int. Cl. G01v
U.S. Cl. 81—119 **4 Claims**



Disclosed is a system for minimizing distortion in the continuity of the input energy of a seismic energy generator. In a hydraulically operated oscillatory seismic generator, the continuity of the seismic energy input to the ground is affected by the valve operation. The present system employs a differential pumping system to control the pressure input to the hydraulic seismic generator without requiring valves thereby eliminating distortion due to valves.

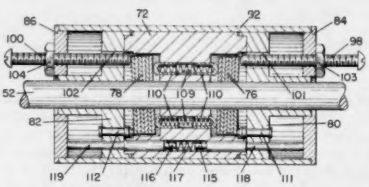
3,828,892
ELEVATOR SYSTEM
Charles L. Winkler, and Alan F. Mandel, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 12, 1973, Ser. No. 340,620
Int. Cl. B66b *1/18*
U.S. Cl. 187—29 R **13 Claims**

An elevator system including an elevator car mounted to serve a plurality of landings in a structure. A car station is disposed in the car which includes a plurality of circuit modules, one for each landing. The circuit modules each include a pushbutton for registering a car call for its associated landing, and a memory element for storing the car call. The memory elements are connected in parallel with a common



call bus, and the car calls are serialized directly from the circuit modules by accessing their memory elements in a predetermined sequence.

3,828,893
SERVO-DRIVE POSITIONING DEVICE
Thomas R. Clark, Utica, Mich., assignor to The National Cash Register Company, Dayton, Ohio
Filed Nov. 22, 1972, Ser. No. 308,652
Int. Cl. B65h *59/10*
U.S. Cl. 188—67 **6 Claims**

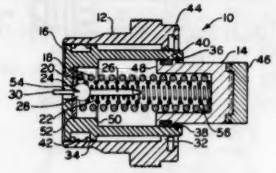


A linkage connects an off-center point of a motordriven assembly to a pivot point on a reference or frame member and is used for holding a movable member in a fixed position relative to the reference member. The linkage includes a double-locking clutch with two sets of springloaded washers carried on a shaft in canted manner, and a pair of opposed plungers positioned between the sets of washers to maintain position of the washers on the shaft. A small force applied to a trigger sleeve, which encloses the clutch, unlocks one set of the washers to release a locking sleeve to move in the direction of the applied force and thereby adjust the position of the locking sleeve in relation to the reference member, and when the force is removed, the locking sleeve is locked on the shaft in a self-centering position.

3,828,894
TELESCOPIC PISTON FOR ADDED BRAKE WEAR ADJUSTMENT
Richard L. Crossman, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 27, 1972, Ser. No. 318,882
Int. Cl. F16d *65/54*
U.S. Cl. 188—71.8 **12 Claims**

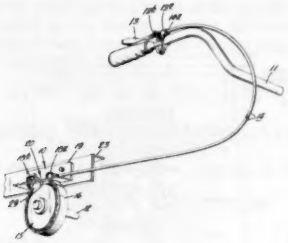
Disclosed is a telescopic brake piston and return mechanism which provides a means for compensating for the wear affectuated reduced thickness of the brake disk stack of an aircraft braking system. Fundamentally, the telesopic brake piston comprises two interfitting pistons received within a brake housing. The smaller of the two pistons brings the brake disks of the brake disk stack into frictional engagement with each other at which time the second piston causes the application of the working brake force. The smaller piston is provided

with a sufficient travel distance to be capable of causing such frictional engagement regardless of reduced thickness of the brake disk stack due to wear. When the smaller piston causes such engagement and the second piston begins to apply the braking force, the smaller piston becomes sealed so as to constitute a solid hydraulic column. The telescopic return mechanism associated with the telescopic piston is such as to return the pressure plate of the brake disk stack a predetermined distance after each braking operation, such distance



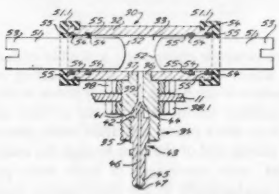
being independent of the amount of wear experienced in the brake disk stack. Consequently, the return mechanism guarantees that the free travel distance of the pressure plate will be consistent throughout the life of the brake disk stack. Fundamentally, this return mechanism comprises a slotted tubular threaded spring follower which receives a tubular threaded sleeve which in turn receives a still smaller slotted tubular threaded member. The various threads on the elements of the return mechanism interlock and provide the means for compensating for brake disk wear.

3,828,895
SELF-ENERGIZING AND SELF-ALIGNING DOUBLE-ACTING BRAKE ASSEMBLY
Edward G. Boaz, P.O. Box 60, Ottsville, Pa. 18942
Filed Feb. 22, 1973, Ser. No. 334,564
Int. Cl. F16d *51/04*
U.S. Cl. 188—77 R **13 Claims**



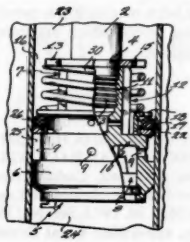
A double-acting brake assembly comprising a drum mounted on a rotary shaft, a brake band with looped ends surrounding the drum, and actuator means to displace ends of the band toward one another, is provided with a mounting bracket having spaced reaction surfaces which cooperate with the ends of the band to permit the band to wrap onto the drum for braking the drum when rotating in either the clockwise or counterclockwise directions. The reaction surfaces extend widthwise of the band adjacent the periphery of the drum, and a pair of guide surfaces extend alongside the ends of the band for aligning the band axially of the drum. In one embodiment, the bracket has an L-shaped cross-section with a flange overlying the drum and the reaction and guide surfaces are provided by the edges of an aperture in the flange. Other forms of brackets, including a bracket combined with a dust cover, are also disclosed. A preferred form of actuator includes a flexible sheath and cable assembly having one end connected to an operating lever and the other end connected to the ends of the band. The actuator draws the looped ends of the band together to engage the band with the drum, but allows lost motion between the end loops and the reaction surfaces of the mounting bracket. The end loops are free to move against either reaction surface, so that no matter which direction the drum is rotating, it will be the end loop at the leading end of the band which engages a reaction surface, and the trailing end of the band will in every case be free to wrap about the drum to provide a servo or self-energizing braking action. This will provide self-energizing braking on both forward and reverse rotation of the drum.

3,828,896
BRAKE ADJUSTER
Tuomas Paimen, 918 Fir St., Campbell River, B. C., Canada
Filed Jan. 18, 1973, Ser. No. 324,894
Int. Cl. F16d *65/44*
U.S. Cl. 188—79.5 SC **5 Claims**



A brake adjuster for adjusting spacing of brake shoes of an automobile brake assembly which includes an adjusting cylinder secured to the brake drum between adjacent ends of the brake shoes opposite the brake cylinder ends thereof, the adjustment cylinder having a cylindrical bore from opposite ends of which project a pair of pistons for engaging the brake shoes. A grease nipple is fitted to adjusting cylinder between the pistons through which a lubricating grease can be injected to move the pistons apart and move the brake shoes into engagement with the drum. The grease nipple is fitted with a screw-type closure valve for closing the grease nipple when the brake shoes are suitably adjusted.

3,828,897
SPECIAL PISTON SEAL
Srinath Nandyal, Park Forest, Ill., assignor to Maremont Corporation, Chicago, Ill.
Filed Dec. 27, 1972, Ser. No. 319,023
Int. Cl. F16f *9/34*
U.S. Cl. 188—317 **2 Claims**

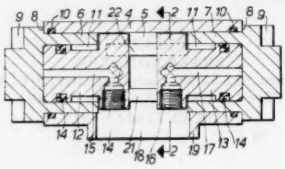


A ring with a non-circular cross section which functions both as a seal between the piston and cylinder wall and also acts as a spring for a compression regulating valve in the piston of a double action hydraulic shock absorber.

3,828,898
HYDRAULIC ACTUATING MEANS FOR VEHICLE BRAKES

Charles Newstead, Walsall, and Andrew Charles Walden Wright, Lapworth, both of England, assignors to Girling Limited, Birmingham, England

Filed Feb. 10, 1972, Ser. No. 225,088
Claims priority, application Great Britain, Feb. 17, 1971, 4874/71
Int. Cl. B60t 11/24
U.S. Cl. 188—345 6 Claims

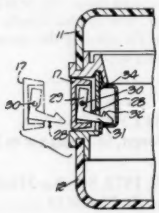


In a brake actuator comprising a double-ended hydraulic cylinder in which work opposed pistons acting on movable friction members of the brake, an outer piston working in each end of the cylinder has in its inner end a blind axial bore in which works an inner piston, and fluid under pressure is supplied to the closed end of the bore to urge the outer and inner pistons apart, axial movement of each inner piston being transmitted mechanically to the outer piston working in the opposite end of the cylinder.

3,828,899
ORIENTATION SENSITIVE LUGGAGE LATCH

Charles J. Scott, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.

Filed Feb. 18, 1972, Ser. No. 227,352
Int. Cl. A45c 3/02
U.S. Cl. 190—41 R 5 Claims



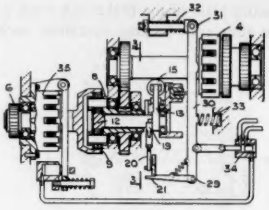
A luggage case latch mechanism is provided with a gravity operated detenting device which prevents unlatching when the case is wrongside-up.

3,828,900
OVERLOAD CUT-OUT MECHANISM FOR MINING MACHINE MECHANICAL HAULAGE MECHANISM

Forrest Symington Anderson, Carluke, Scotland, assignor to Anderson Mavor Limited, Mothewell, Lanarkshire, Scotland

Filed May 30, 1973, Ser. No. 365,131
Claims priority, application Great Britain, May 31, 1972, 25464/72
Int. Cl. F16d 67/02, 13/22
U.S. Cl. 192—12 A 3 Claims

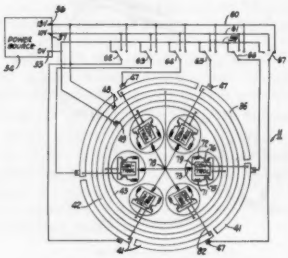
The invention relates to overload cut-out mechanism for mineral mining machine haulage mechanism in which a torque reaction trip-out device is associated with an epicyclic gear interposed in the gear train of the haulage mechanism between the output from a forward and reverse gear selector and a constant ratio reduction gear train driving a haulage chain sprocket or the like. The torque reaction trip-out device includes a torque anchor arm connected to the sun wheel of the epicyclic gear and according to the load transmitted the torque arm is deflected and arranged to give unidirectional movement to a second arm to which is attached an adjustable rod which trips a latch member to release a friction type clutch in the gear transmission upstream of the epicyclic gear.



3,828,901
ELECTRIC COUPLING CONTROL MEANS

Noah Flueckiger, Solon, Ohio, assignor to Acme-Cleveland Corporation, Cleveland, Ohio

Filed Aug. 1, 1973, Ser. No. 384,475
Int. Cl. F16d 67/02
U.S. Cl. 192—12 D 18 Claims

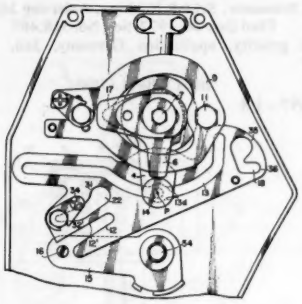


An electrical coupling control system is disclosed for a multiple spindle automatic machine tool which has an indexable spindle carrier with a plurality of rotatable spindles. An electrical clutch and brake unit with a neutral condition is provided for each spindle and the clutch, brake, or neutral condition is selectively established by different values of a single polarity control DC voltage. This selector means controls each particular spindle for each spindle position of the spindle carrier. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,828,902
IMPROVED SINGLE LEVER REMOTE CONTROL DEVICE FOR ENGINES

Masaru Saito; Norio Hasegawa, and Kenaki Murase, all of Tokyo, Japan, assignors to Starting Industry Company Limited, Tokyo, Japan

Filed Sept. 8, 1972, Ser. No. 287,409
Claims priority, application Japan, Sept. 9, 1971, 46-69872; Jan. 25, 1972, 47-9276; Jan. 26, 1972, 47-11092; Jan. 26, 1972, 47-11093; Jan. 26, 1972, 47-11094; Jan. 26, 1972, 47-11095; Apr. 1, 1972, 47-38715; Apr. 1, 1972, 47-38716; Apr. 1, 1972, 47-38717; Apr. 1, 1972, 47-38718
Int. Cl. B60k *29/00*
U.S. Cl. 192—.096 **5 Claims**

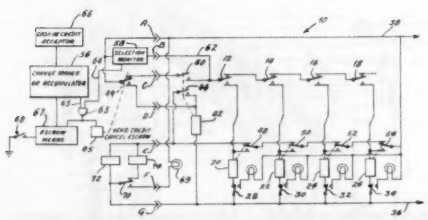


This invention relates to a remote control device utilizing a single control lever for both the clutch and throttle of the engine to be controlled, together with a free acceleration lever for adjusting the engine throttle independently of the single control lever. A mechanical interlock is provided between the free acceleration lever and the throttle actuating plate controlled by the single lever so that the free accelerator lever is automatically returned to neutral position before actuation of the engine clutch by the single control lever. Preferred arrangements for adjusting the strokes of the several actuating plates embodied in the device are also disclosed and the device is designed to be interchangeable for pushing or pulling actuation of the control cables.

3,828,903
VEND CONTROL WITH ESCROW UNTIL AVAILABLE PRODUCT SELECTION

Joseph L. Levasseur, St. Louis, Mo., assignor to H.R. Electronics Company, High Ridge, Mo.

Filed Feb. 12, 1973, Ser. No. 331,380
Int. Cl. G07f *5/24*
U.S. Cl. 194—1 N **17 Claims**

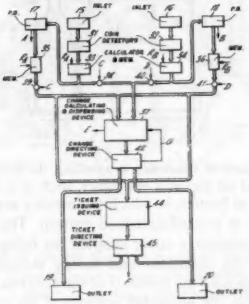


A control circuit which provides escrow capability at all times after money is deposited in a vending machine and until selection is made of a product which is available, the control circuit including accumulator means, vend selection means, escrow means, and monitor selector means which respond to operation of the vend selection means under certain conditions to control other operations of the circuit including enabling a vend cycle.

3,828,904
AUTOMATIC VENDING MACHINE INCLUDING A PLURALITY OF CUSTOMER UNITS INTERCONNECTED WITH A SINGLE PROCESSING AND DISPENSING UNIT

Nobuyosi Naitou; Keizi Baba; Sigehisa Huziwara, all of Kyoto, Japan, and Takesi Yamanaka, Mountain View, Calif., assignors to Omron Tateisi Electronics Company, Kyoto, Japan

Filed Jan. 22, 1973, Ser. No. 325,577
Claims priority, application Japan, Jan. 27, 1972, 47-11567
Int. Cl. G07f *11/02*
U.S. Cl. 194—10 **10 Claims**

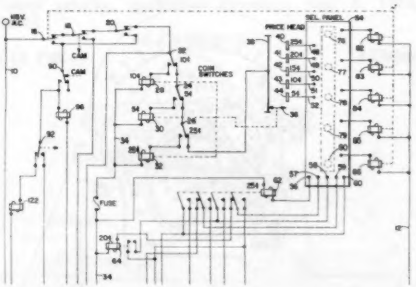


An automatic vending machine which comprises at least two customer serving units which are individually used by customers to input purchase data into the machine and a single processing unit commonly serving the customer serving units so that in accordance with the input data the processing unit causes an article to be dispensed through the outlet of that customer serving unit through which the purchase data have been entered.

3,828,905
VENDING MACHINE CIRCUITRY

Edmin L. Van Meter, St. Paul, Minn., assignor to Gross-Given Mfg. Company, St. Paul, Minn.

Filed June 25, 1973, Ser. No. 373,198
Int. Cl. G07f *11/00*
U.S. Cl. 194—10 **5 Claims**



Circuitry for controlling a vending machine to prevent cheating. If after the change-maker is set, a vend is not initiated within a predetermined interval, the change-maker is reset.

3,828,906

AUTOMATIC VENDING DEVICE FOR PACKAGED CONTAINERS SUCH AS BOTTLES, CANS OR SIMILAR ARTICLES

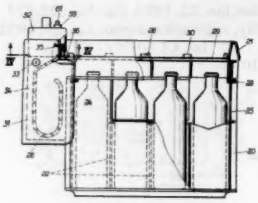
Walter Scheilhorn, Bad Kreuznach, and Edwin Koch, Rockenhausen, both of Germany, assignors to Seitz-Automaten GmbH

Filed Aug. 2, 1971, Ser. No. 167,934

Claims priority, application Germany, Aug. 6, 1970, 2039151

Int. Cl. G07f *11/4*

U.S. Cl. 194—59 **18 Claims**



The specification discloses a vending device adapted for being mounted on top of a container, such as a container for articles, such as bottles, in which the articles are arranged in the container in a predetermined pattern. The vending arrangement comprises a cover adapted for being fixed to the open side of the container and having moveable portions thereon for exposing the contents of the container. According to the invention, the moveable portions of the cover are normally locked against movement and are released for exposing a predetermined number of articles for removal under the control of a coin operated mechanism. The device for locking the moveable portions of the cover against movement is advantageously in the form of a belt-like element lockingly engaging the portions but being moveable to permit release of the portions singly and for movement a predetermined distance to expose the desired number of articles, for example, one or two.

3,828,907

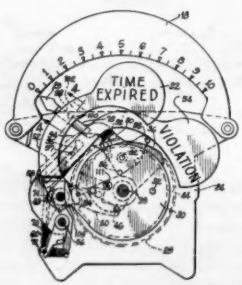
DEFERRED TIME METER

Walter R. Bock, Chicago, Ill., assignor to Qonaar Corporation, Elk Grove Village, Ill.

Filed Apr. 16, 1973, Ser. No. 351,235

Int. Cl. G07f *17/24*

U.S. Cl. 194—72 **10 Claims**



A meter construction, such as a parking meter, wherein a clock mechanism is provided along with means for winding the clock mechanism in response to the insertion of coins. The meter includes indicator means to visually indicate the amount of time purchased, and retaining means are employed to engage the indicator means for preventing movement thereof to an indicating position. A contacting mechanism is associated with release means for the retaining means. Upon the insertion of a sufficient number of coins to accomplish the purchase of a pre-selected amount of time, the contact means engage the retaining means whereby the indicator means are permitted to move to provide a visual indication of the time purchased. The meter thus avoids any display of time purchased until the minimum legal amount of coins have been inserted in the meter.

3,828,908

MOSAIC PRINT HEAD

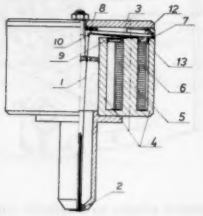
Winfried Schneider, SchloB Neuhaus, Adlerweg 16, Germany

Filed Dec. 26, 1972, Ser. No. 318,487

Claims priority, application Germany, Jan. 11, 1972, 2201049

Int. Cl. B41j *33/00*

U.S. Cl. 197—1 R **10 Claims**



A mosaic print head comprises a centrally arranged needle guide for holding individual printing needles substantially vertically and for permitting substantially vertical axial movement thereof for printing. A plurality of electromagnets are arranged around the upper ends of the needles and each includes an armature which is movable relative to a core. A leaf spring is disposed between the armature and the core and its outer end is engaged on an associated needle which is moved by the armature to actuate the needle during printing.

3,828,909

CODE KEYBOARD FOR TYPEWRITERS AND SIMILAR OFFICE MACHINES

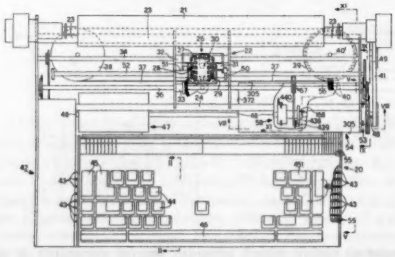
Domenico Roano, Parella, and Armando Quarisa, Cascinette D'Ivrea, both of Italy, assignors to Ing. C. Olivetie & Co., S.p.A., Ivrea (Torino), Italy

Filed June 5, 1972, Ser. No. 259,895

Claims priority, application Italy, June 11, 1971, 68987/71

Int. Cl. B41j *23/02*

U.S. Cl. 197—16 **25 Claims**



A code keyboard for typewriters has a plurality of keys, a series of code bars and a plurality of sliders. The setting sliders are urged back by corresponding springs and are normally

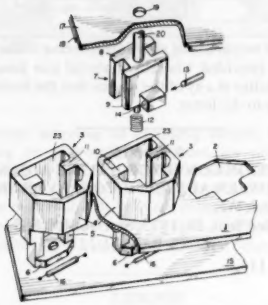
lathed by hooks controlled by the keys. The released slider engages a starting clutch and is successively shifted forward by a setting lug for setting the code bars. The lug is operated by a setting spring and is controlled by the clutch.

3,828,910

CODING KEYBOARD

Guy-Paul Glay, Argenteuil, France, assignor to Societe D'Applications Generales D'Electricite et de Mecanique, Paris, France

Filed Nov. 14, 1972, Ser. No. 306,286
Claims priority, application France, Dec. 30, 1971, 71.47578
Int. Cl. B41j 5/08
U.S. Cl. 197—98 1 Claim



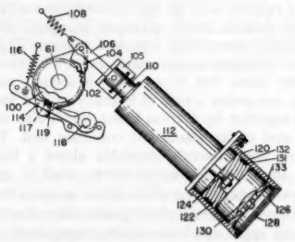
Coding keyboard for a teleprinter. It comprises a central plate, a lower plate which is a printed circuit panel and an upper plate forming a cover, these three plates being parallel to one another. The central plate has holes in which are inserted push-button guides. Push-buttons may slide in said guides such that, when a key connected to a push-button is lowered, a magnet fixed to the push-button controls the closing of a switch with flexible blades fixed on the upper face of the printed circuit panel.

3,828,911

PLATEN INDEXING ACTUATOR

Melvin A. Soderstrom, Rural Hall, N.C., assignor to The National Cash Register Company, Dayton, Ohio

Filed Mar. 7, 1973, Ser. No. 338,655
Int. Cl. B41j 19/76
U.S. Cl. 197—114 R 3 Claims



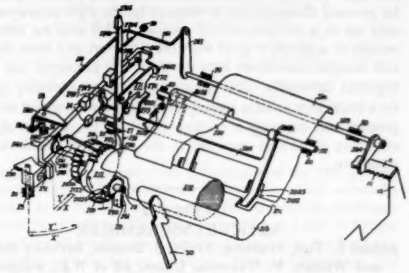
A controlled motion is applied to drive a pawl and ratchet mechanism in incremental steps for indexing the platen of a business machine. A pneumatic dashpot is attached to the plunger of an axial-pull solenoid wherein the use of both an orifice and a flip-type seal within the dashpot balances the available actuating forces and results in a smoother indexing action under varying loads on the platen.

3,828,912

PAGE END INDICATOR MECHANISM FOR TYPEWRITERS OR LIKE MACHINES

Wolfgang Prade, Nisou, Czechoslovakia, assignor to Zbrojovka, Narodni podnik, Brno, Czechoslovakia

Continuation-in-part of Ser. No. 883,557, Dec. 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 810,543, March 26, 1969, abandoned. This application Feb. 14, 1972, Ser. No. 226,091
Claims priority, application Czechoslovakia, Mar. 28, 1968, 2379-68
Int. Cl. B41j 29/44
U.S. Cl. 197—189 4 Claims



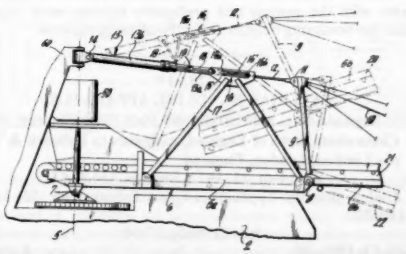
A typewriter or similar machine provided with controls for automatically terminating the operations when the last line imprinted on a sheet is at least approximately at a given distance from the bottom edge of a sheet. A feeler coacts with the sheet to determine when the bottom edge of the sheet reaches a given location. At this moment a toothed wheel operates to store a given number of lines which are imprinted on the sheet subsequent to arrival of its bottom edge at this given location. After the toothed wheel receives this given number of lines, a line controlling pawl is automatically brought out of engagement with a ratchet wheel which is operatively connected to a platen thereby preventing further advance of the sheet. At the same time a blocking unit is automatically actuated to block the movement of the carriage of the machine.

3,828,913

LIFTING ARRANGEMENT FOR CANTILEVER ARMS OF CONVEYORS

Gerhart Scholler, Bad Schwartau, Germany, assignor to Orenstein & Koppel AG, Lubeck, Germany

Filed July 10, 1973, Ser. No. 377,896
Claims priority, application Germany, Aug. 5, 1972, 7229102
Int. Cl. B65g 65/16
U.S. Cl. 198—9 8 Claims



A lifting arrangement particularly for cantilever support arms of conveyors of such devices as excavators, comprises a

first rear arm part which is supported for pivotal movement adjacent one end about a horizontal axis. A second front cantilever arm part is pivotally mounted about a second horizontal axis which is carried on the first cantilever arm. Lifting means in the form of a fluid pressure cylinder is pivotally connected to a mast which extends above the rear pivot of the first cantilever arm part and it is connected through a tow connection which is braced to the first cantilever part. The tow connection, for example, includes two diagonal braces pivoted at spaced locations to the first cantilever part and connected at their upper ends to a holding plate which is moved by a piston movable in the fluid cylinder of the lifting device. The tow connection also includes a connection to the second front conveyor part. The connection is such that the first part may be pivoted downwardly in respect to the first conveyor part only up to a predetermined amount and it may be lifted upwardly to a position level with the first part and then the first and second cantilever arm parts of the conveyor are lifted together upwardly. The apparatus is advantageously carried on a excavator vehicle having a carriage for moving it over the ground and carrying a bucket-wheel cantilever arm support structure at its end opposite to the conveyor cantilever arm structure.

3,828,914

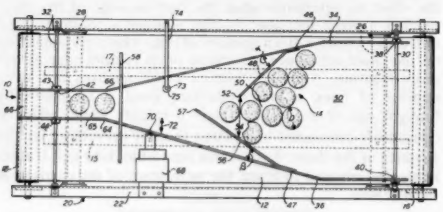
ARTICLE UNSCRAMBLER

Alonzo E. Tull, Madison; Ernest J. Benson, Berkeley Heights, and William V. Weiverts, Union, all of N.J., assignors to Bentul Equipment Corporation, Berkeley Heights, N.J.

Filed Aug. 7, 1972, Ser. No. 278,296

Int. Cl. B65g *47/26*

U.S. Cl. 198—30 **11 Claims**



Apparatus for arranging an advancing group of randomly distributed hamburger patties or similar bodies into an aligned pattern for conveyance to a packaging station or the like. A pair of generally converging side rails are rigidly restrained at their respective end points, and each carries a deflector surface extending into the conveyance zone, which surfaces in combination, effects the required regrouping. The side rails are vibrated at a point intermediate to the restrained ends as an anti-bridging expedient. The conveying surface may be defined by a belt divided along the direction of conveyance into a central narrow sub-belt and a pair of wider flanking sub-belts, with the central belt preferably moving more rapidly than the bordering belts to aid in the aligning process.

3,828,915

MATERIAL HANDLING APPARATUS

Eric Reginald Cox, Ashchurch, and John Shiel Clements Wall, Cheltenham, both of England, assignors to Babcock & Wilcox Limited, London, England

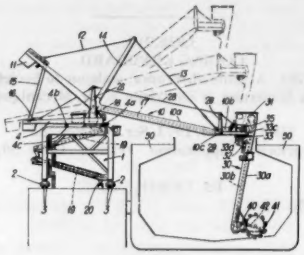
Filed Feb. 22, 1973, Ser. No. 334,566

Claims priority, application Great Britain, Feb. 22, 1972, 8166/72

Int. Cl. B65g *37/00*

U.S. Cl. 198—88 **5 Claims**

The invention relates to material handling equipment having an elevator unit depending from a conveyor boom. Means is provided for loading the elevator unit at a location spaced along the elevator unit from said boom. The connection between the elevator unit and the conveyor boom is such that



the former can swivel about an axis transverse to the latter and means is also provided whereby material can pass from the former to the latter at any of the angles that the former can occupy relatively to the latter.

3,828,916

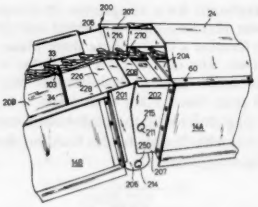
MULTISECTION CONVEYOR HAVING ADJUSTABLE ELBOW BETWEEN ADJACENT CONVEYOR SECTIONS

Paul Patz, Pound, Wis.

Filed Sept. 26, 1973, Ser. No. 400,885

Int. Cl. B65g *21/12*

U.S. Cl. 198—115 **15 Claims**



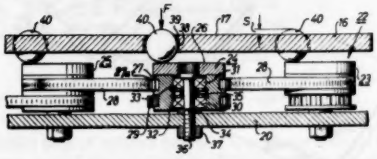
A multisection chain-flite conveyor for moving communited material such as cattle feed has an adjustable elbow between the juxtaposed ends of two conveyor sections to enable relative vertical pivotal adjusting movement between the two sections. Each conveyor section comprises a supporting framework and a bed mounted thereon and sprockets are located at the remote ends of the multisection conveyor for supporting an endless chain arranged alongside the beds which has spaced apart flites attached thereto. The elbow comprises two pivotably interconnected elbow sections, each attached to the inner end of a conveyor section, and each elbow section comprises a pair of laterally spaced apart side plates joined together by a cross brace which also serves to support one end of its associated conveyor bed. The two elbow sections are relatively pivotable about a horizontal upper pivot shaft. A horizontal lower shaft is mounted between the side plates of one of the elbow sections below the upper shaft. Upper and lower chain guide rollers are rotatably mounted on the upper and lower shafts, respectively, and the upper and lower sides of the chain ride on the upper sides of the upper and lower rollers, respectively. A curved flite guide is mounted over the hub of the lower roller to prevent interference with the flites on the lower side of the chain. Overlapping tilt shields connected to the cross braces of the two elbow sections bridge the gap between the juxtaposed ends of the conveyor section beds. The upper roller rotates on the upper pivot shaft and thus prevents ear on the tilt shields.

3,828,917

DIRECTION REVERSING DEVICE FOR TRANSPORT EQUIPMENT

Henrik William Stig Oestergren, Enskede near Stockholm, Sweden, assignor to Aktiebolaget Fredr. Wagner, Stockholm, Sweden

Filed Dec. 27, 1972, Ser. No. 319,081
Claims priority, application Sweden, Jan. 11, 1972, 275/72
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R 12 Claims



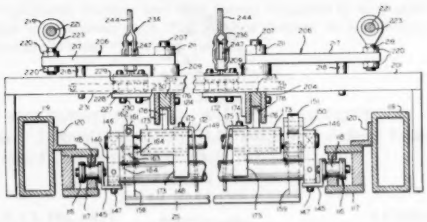
A direction reversing or changing device, especially for transporting or conveying equipment for piece goods or materials, such as plates, newspaper bundles, cardboard or the like, comprising a number of balls forming a conveying surface for the materials. The balls are mounted to be rotatable in all directions, and are driven in random directions with the aid of an adjustable drive mechanism arranged beneath each ball.

3,828,918

SLUG CONVEYOR FOR CONVEYING SLUGS OF ARTICLES AND RELEASING THE SLUGS OF ARTICLES FOR PACKAGING

Richard C. Talbat; Edward Rose, both of Skokie, and Robert A. Roth, Chicago, all of Ill., assignors to Peters Machinery Company, Chicago, Ill.

Division of Ser. No. 173,473, Aug. 20, 1971, Pat. No. 3,719,020. This application Nov. 30, 1972, Ser. No. 311,005
Int. Cl. B65g *15/24*
U.S. Cl. 198—155 15 Claims



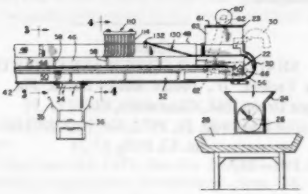
Endless chain type of slug conveyor for slugs of articles, such as cookies, in which the chain has upper and lower runs and flights in the form of drop gates are spaced along the chains in the space between the upper and lower runs. The flights are suspended from attachments pivotally carried by certain links of the chain and are biased by springs in slug carrying positions and are pivoted by cam and follower means in the slug release positions. The conveyor also includes side guides extending along the material carrying run of the conveyor which are adjustably moved toward and from each other in accordance with the number of slugs conveyed by the conveyor.

3,828,919

FEED CONVEYOR WITH SELECTIVE DISCHARGE

Robert G. Holtsclaw, and Jerrell D. Holtsclaw, both of Switz City, Ind.

Continuation-in-part of Ser. No. 207,201, Dec. 13, 1971, Pat. No. 3,750,861. This application Feb. 23, 1973, Ser. No. 335,361
Int. Cl. B65g *15/00*
U.S. Cl. 198—160 6 Claims



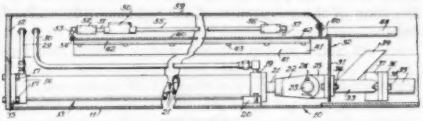
A single-chain feed conveyor for silage and the like, having a series of flights on a central bottom chain, which normally discharges at its forward end, is modified to provide discharge at intermediate points. Silage is received from a silo in irregular amounts and conditions. Leveling means over the forward-conveying trough breaks up any large clumps of the silage, and distributes the material more evenly along the conveyor pockets. A pressure plate over the end portion of the conveyor presses any high-standing material into the pockets and holds the material in the pockets as the flights swing part way about the sprocket at the forward discharge end. A shroud at such discharge end has an open condition in which it permits normal forward-end discharge from beneath the pressure plate, and has a closed condition in which it forms a return bend channel to receive the conveyed material from beneath the pressure plate and guide it to the return trough containing the return stretch of the conveyor chain. The returning flights then convey the material along the return trough to an opening in any desired point therein. The return bend shroud is shaped with wide clearance from the conveyor flights at the top to permit freedom of movement of the pressure plate and permit the flights to free themselves of overlying material, and with close clearance at the bottom where the flights swing toward the return trough to pick up the material cleanly from the bottom of the shroud.

3,828,920

HARPOON CONVEYOR

Roger T. Becker, Kalamazoo; Stephen L. Hatter, Portage, and Donald McMullin, Jr., Kalamazoo, Mich., assignors to Kalamazoo Conveyor Company, Kalamazoo, Mich.

Filed Apr. 13, 1972, Ser. No. 243,632
Int. Cl. B65g *25/08*
U.S. Cl. 198—221 6 Claims



A harpoon or chip conveyor is provided having a trough fitted with material retaining members or barbs on its inner sides and a plurality of interconnected plows driven in backward and forward or reciprocal motion by a reciprocating hydraulic power unit. Some of the retaining members or barbs are provided in the form of wedge-shaped or L-shaped angles affixed to the trough wall at their free ends by suitable means

such as welding. The material retaining members are so oriented that a small vertical portion faces the direction of travel of the material being conveyed. As a further improvement, a cover is provided over the hydraulic power unit and piston rod in the form of a pair of telescoping bulkhead members, thereby protecting the hydraulic power unit from being fouled by chips and permitting trough loading at areas very close to the hydraulic unit without fouling the hydraulic unit. As a further improvement, for certain applications flexible barbs formed of a sheet plastic material may be utilized as a safety measure.

3,828,921

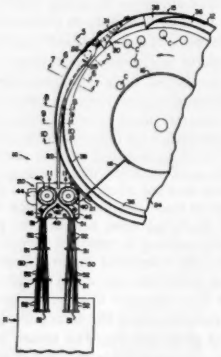
SHALLOW CUP FEEDER AND ORIENTER

Marcus Tackett, Jr., Indian Rocks Beach, Fla., assignor to Tangen Drives, Inc., Clearwater, Fla.

Filed Aug. 21, 1972, Ser. No. 282,115

Int. Cl. B65g *47/24*

U.S. Cl. 198—287 **8 Claims**



A feeder for shallow cups, typically milk bottle caps and the like, is disclosed which includes a rotary centrifugal feeder, a pickup plow and tube tangentially mounted to the rotary feeder to deliver the cups generally in rolling configuration but randomly oriented as to the direction of the side walls into a power sorter which sorts the same and separates them so that the oriented cups leave the power sorter in two tracks oriented in the same direction. The power sorter has a pair of driven counter rotating wheels having resilient outer walls, preferentially made of closed cell neoprene. The diverging tracks are made up of a pair of pick up walls which tangentially engage the counter rotating rollers, and an opposed pair of sorter walls which define the two tracks delivering the oriented parts from the counter rotating rollers which respectively divert the path of the caps fed therebetween in the direction of the orientation of the opposed side walls of the cup.

3,828,922

ANTI-THEFT PACKAGING DEVICE

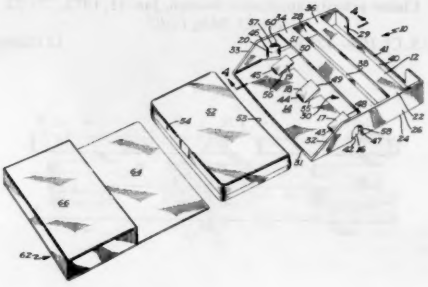
Howard P. Holkestad, Minnetonka, Minn., assignor to J.L. Marsh, Incorporated, Minneapolis, Minn.

Filed July 31, 1972, Ser. No. 276,657

Int. Cl. B65d *55/04, 85/67*

U.S. Cl. 206—1.5 **11 Claims**

An anti-theft packaging device is disclosed including an enclosure having an opening for insertion of the article to be packaged with the enclosure including a lip extending the dimensions of the enclosure and thus the article to be packaged and including resilient projections around and about the opening of the enclosure with the projections allowing the



insertion of the article into the enclosure and preventing ease of withdrawal of the article from the enclosure without the use of a removal tool. The removal tool allows the simultaneous bending of all resilient tabs to thus allow removal of the article from the anti-theft device.

3,828,923

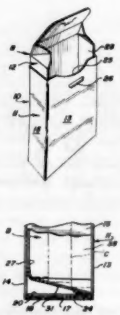
COMPOSITE SLIDEABLE DISPENSING CARTON

Floyd L. Phillips, Jr., Winston-Salem, N.C., assignor to R.J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Dec. 7, 1972, Ser. No. 312,822

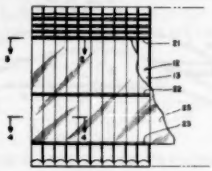
Int. Cl. B65d *5/38, 85/10*

U.S. Cl. 206—254 **10 Claims**



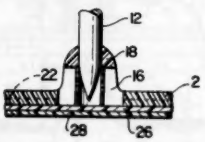
A composite dispensing carton is provided which includes an outer member closed at the bottom and open at the top, and an inner member mounted within the outer member for movement between extended and retracted positions relative to the outer member. The inner member is affixed to the outer member so as to restrict movement of the inner member to a predetermined extended position. The inner member is provided with a cover for closing the top of the outer member when said inner member is in said retracted position.

3,828,924
COILED STRIP OF COLLATED FASTENERS
Garry R. Perkins, Palatine, Ill., assignor to Spotnails, Inc., Rolling Meadows, Ill.
Filed Nov. 20, 1972, Ser. No. 307,972
Int. Cl. B65d *83/02, 85/24*
U.S. Cl. 206—343 4 Claims



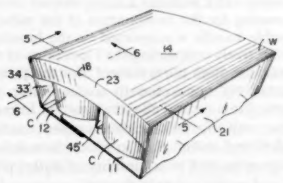
A coiled strip of collated fasteners is provided wherein the fasteners thereof are arranged in abutting side-by-side relation. Corresponding portions of the fastener shanks are interconnected. A continuous flexible plastic film is applied to exposed portions of the fasteners to effect collating thereof.

3,828,925
STUD MAGAZINE
Charles Magyar; Lewis A. Root, both of Stamford, and Edwin C. Senger, Fairfield, all of Conn., assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein
Filed Mar. 13, 1972, Ser. No. 234,217
Int. Cl. B65d *85/24*
U.S. Cl. 206—347 7 Claims



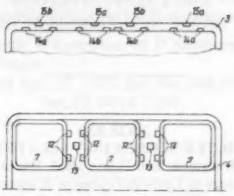
This invention relates to a stud magazine for use with a stud driving device comprising a strip of material having a plurality of apertures therein, and stud means mounted in said apertures in a manner such that the tips thereof do not project beyond the plane of the material.

3,828,926
MULTI-UNIT PACKAGE WITH CURVED CONTOUR
Harry J. Rossi, Parsippany, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.
Filed Mar. 17, 1972, Ser. No. 235,644
Int. Cl. B65d *5/08, 65/06*
U.S. Cl. 206—427 6 Claims



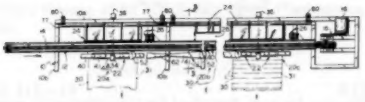
A package characterized by a double row of product containers which are in the form of tubs each having its side wall tapering downwardly and inwardly from an outwardly directed top flange on the top face of which the margins of a sheet-like cover member are sealed, and a wrapper forming blank of foldable sheet material which is tightly drawn about the top, bottom and oppositely disposed portions of the inner side walls of the containers and forms the top wall into a generally convex or relatively shallow peaked contour in close contact with top portions of the container cover members so as to prevent damage thereto, with a relatively narrow gusset panel at each end of the tube formed by the wrapper which depends from a hinge line formed by inwardly bowed or inwardly directed scores and which is held at opposite ends by a folded web section integrally connected to the associated side wall of the wrapper.

3,828,927
PLASTIC BOTTLE CRATES
Alexander Schoeller, Karl-Marr Str. 10, Munchen-Solln, Germany (8000)
Filed Sept. 24, 1971, Ser. No. 183,597
Claims priority, application Switzerland, Sept. 28, 1970, 14333/70
Int. Cl. B65d *21/02*
U.S. Cl. 206—511 1 Claim



A plastic bottle crate having interengaging tops and bottoms which are so constructed to permit the crates to be transported on roller-type conveyors without rattling or bouncing. The particular construction permits the crates to be stacked in vertical alignment as well as in displaced fashion.

3,828,928
LOG-SORTING APPARATUS
Olsen Roderick, Jr., Beaverton, Oreg., assignor to Kockum Industries Incorporated, Talladega, Ala.
Filed Nov. 24, 1972, Ser. No. 308,953
Int. Cl. B07c *3/06*
U.S. Cl. 209—74 R 29 Claims

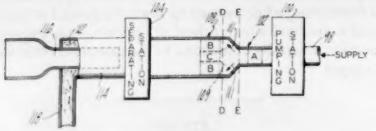


A log-sorting apparatus includes a trough conveyor having a continuously driven endless chain moving closely spaced logs endwise past several sorting stations spaced along the conveyor. Kicker arm devices at one side of the conveyor at each station rotate across the log path to push a selected log from the opposite side thereof. The displaced log engages both a backstop and an endstop which limit its lateral and endwise movement and deflect it downwardly to an appropriate cross conveyor. Each kicker arm device has a pair of horizontal kicker arms radiating in opposite directions from a common vertical shaft. In their inactive conditions, the arms extend alongside the conveyor. When activated by the presence of a selected log, the shaft rotates through one-half a revolution so that only one of the two arms of each device swings horizontally across the conveyor to push the selected log therefrom.

3,828,929
HOMOGENIZING METHOD AND APPARATUS

William E. Hickey, Jr., West Hartford, Conn.

Filed Jan. 22, 1973, Ser. No. 325,135
Int. Cl. B01d 21/26
U.S. Cl. 210—70 21 Claims

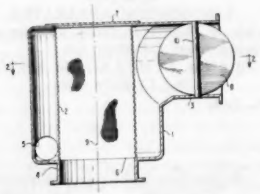


A method and apparatus for treating flow media at a pumping station wherein an additive is mixed with the flow media at the pumping station and conveyed thereby to a separating station where the conveyed material is subjected to centrifugal force to at least partially separate the material into portions of different specific gravity. A separated portion of the material is removed downstream of the separating station.

3,828,930
FILTER SCREEN INSTALLATION

Klaus Eimer, Ratingen, and Heinz Thal, Lintorf, both of Germany, assignors to Ludwig Taprogge (Cleaning Installations for Pipe Heating Exchanger), Dusseldorf, Germany

Filed May 25, 1973, Ser. No. 363,797
Claims priority, application Germany, May 26, 1972, 2225727
Int. Cl. B01d 29/42
U.S. Cl. 210—137 9 Claims



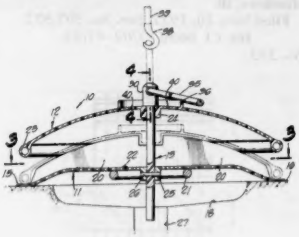
A filtering device is described for separating solid impurities from a liquid stream in a pipeline of the shell filter type used in cooling lines of power plants. An adjusting valve is pivotally arranged in the inlet connection to the device in such a manner that the liquid stream flows in a swirling stream around a cylindrical filter screen basket thereby removing deposited solids from the surface of the filter.

3,828,931
SUBMERGED LITTER COLLECTOR

Evan R. Henricksen, 245 W. Las Flores, Arcadia, Calif. 91006

Continuation-in-part of Ser. No. 198,712, Nov. 15, 1971, abandoned. This application Dec. 21, 1972, Ser. No. 317,102
Int. Cl. E03f 5/06; B01d 35/28
U.S. Cl. 210—163 17 Claims

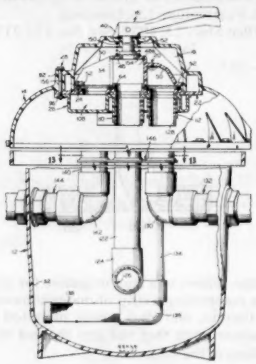
A litter collector for the outlets of swimming pools and the like liquid containers, the trap being formed of non-corrosive material and having a movably supported buoyant cover open while the trap is submerged but which closes automatically while being lifted thereby to trap collected litter. The cover is held in an extended open position when submerged and closes by gravity when not submerged.



3,828,932
ROTARY SWIMMING POOL VALVE

Marcel Schneer, Montreal, Quebec, Canada, assignor to Coleco Industries, Inc., Hartford, Conn.

Filed Apr. 18, 1973, Ser. No. 352,108
Int. Cl. E04h 3/20
U.S. Cl. 210—169 10 Claims



A multiport rotary valve is provided which is particularly adapted for use in connection with the filtering system for a swimming pool. The rotary valve is capable of being mounted directly onto a filter tank unit whereby in the resulting assembly all of the piping connections between the rotary valve and the filter tank unit are made internally, i.e., within the assembly. The rotary valve includes a dome-shaped cover which comprises a housing for the components of the valve. An externally accessible handle is supported on the housing and is operable for selectively connecting the input ports of the valve to one of the various other ports thereof. For this purpose, the handle is operatively connected to a distributor which is rotatably mounted in a central chamber portion formed in the valve. The rotary valve further includes a gasket carrier which supports a gasket, and an end plate in which there is formed an inlet pressure port as well as a plurality of outlet ports. The gasket carrier and gasket are cooperatively associated with the distributor whereby input fluid flows from a pump through an opening provided in the gasket carrier and gasket to the central chamber portion of the valve. After reaching the central chamber portion of the valve, the fluid is directed downwardly by the distributor to another opening provided in the gasket

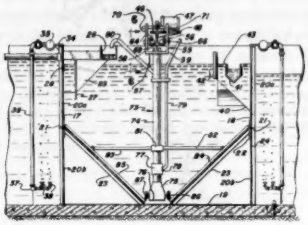
and gasket carrier which is in communication with a preselected outlet passage. The selection of the latter passage is accomplished by rotating the handle to thereby cause the distributor to also be rotated. As the distributor rotates, it is lifted off the gasket. When the handle is in any one of the six operating positions, thereof other than the winterize position, the distributor compresses the gasket thereby to provide a seal between the various openings which are formed in the gasket carrier to prevent leakage therebetween of the fluid which is supplied to the central chamber portion of the valve.

3,828,933

PLANT FOR WASTEWATER TREATMENT

Quentin L. Hampton, Ormond Beach, Fla., and Edward J. Matras, Rolling Meadows, Ill., assignors FMC Corporation, Chicago, Ill.

Filed Feb. 14, 1972, Ser. No. 225,984
Int. Cl. C02c *1/02*
U.S. Cl. 210—195 **8 Claims**



A method and apparatus are provided for converting a basic unitary tank structure into a series of communicating treatment zones, through introduction of a self-supporting modular settling tank member having liquid fillable fillets as part of the structure so that the member may be anchored in position to provide watertight tank member segments which operate as cooperative treatment zones, the modular tank member providing the basic support structure for the aeration means required to convert an adjacent tank segment into an aeration zone and for support of means for effecting removal of sludge separated in the modular tank member from mixed liquor received from the aeration zone so that part of the sludge can be returned to the aeration tank and the balance discharged to any additional treatment zones and for means by which clarified effluent may be discharged from an upper portion of the modular member.

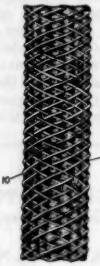
3,828,934

MEDIA FOR WOUND FILTER ELEMENTS

John S. Green, Lebanon; John E. Luttrell, Tell City, and James E. Schmitz, Indianapolis, all of Ind., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 223,167, Feb. 3, 1972, abandoned. This application Oct. 9, 1973, Ser. No. 404,840
Int. Cl. B01d *27/00*
U.S. Cl. 210—457 **9 Claims**

Filter cartridges formed by winding yarn or roving in a honeycomb pattern around a center core are made with improved porosity control and filtration capacity by using a substrate to which fibers are attached or flocked before winding. Substrates of varying diameter and composition may be used and may have fibers of varying length, diameter and composition attached, depending on the porosity and filtration rate desired in the finished cartridge.

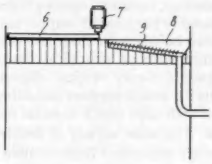


3,828,935

DEVICE FOR REMOVING FLOATED MATERIAL IN FLOTATION PROCESSES

Jean-Marie Rovel, Versailles, France, assignor to Degremont Societe Generale D'Epuration et D'Assainissement, Rueil-Malmaison, France

Filed Apr. 17, 1972, Ser. No. 244,472
Int. Cl. B01d *12/00*
U.S. Cl. 210—523 **7 Claims**



Device for giving a reinforced structure to the cake of floated materials in flotation processes during the operation of removing the floated materials.

The device comprises essentially a grillage of vertical walls inserted in the liquid containing the materials in suspension to be floated.

3,828,936

BICYCLE HANGER

Karl Blake Hoenig, 4582 MacArthur Blvd., Washington, D.C. 20007

Filed Feb. 27, 1973, Ser. No. 336,337
Int. Cl. A47f *7/00*
U.S. Cl. 211—19 **8 Claims**

A bicycle hanger comprising a main body portion provided with means adjacent the opposite ends thereof for mounting

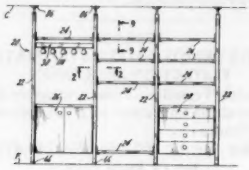
the hanger on a supporting surface. A wheel hanging member extends laterally from the top of the main body portion and is formed to receive and support a rim of the bicycle. A cradle member extends laterally from the opposite end of the main body portion to receive and support the other wheel of the bicycle when the bicycle is suspended from the hanger. The main body portion is generally semi-circular in its upper region to provide lateral stability, and the main body portion extends throughout its length in contiguous engagement with the supporting surface thereby to provide vertical stability.

3,828,937

ADJUSTABLE POLE SUPPORT SYSTEM

Gerald C. Nash, 809 Georgina Ave., Santa Monica, Calif. 90402

Filed Aug. 9, 1972, Ser. No. 279,179
Int. Cl. A47f *5/10*
U.S. Cl. 211—86 **14 Claims**



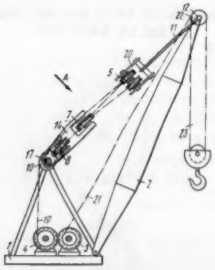
A system of shelves, cabinets, lighting fixtures and other accessories is adjustably horizontally supported on vertical poles removably located between the floor and ceiling of a dwelling or other structure without structural damage thereto. The poles are designed for easy vertical alignment, provide numerous locations for article support mounting pins and may be easily decorated with caps which conceal mounting pin apertures from view. The wide variety of articles supportable by the pole system are prevented from relative rotational movement with respect to the poles by coaction between article supports and channels formed in the poles.

3,828,938

LUFFING CRANE

Mikhail Fedorovich Glushko, prospekt Shevchemko 15/5, k.v. 17, and Ilia Fedorovich Pakhomov, ulitsa Lenina 44/46 k.v. 55, both of Odessa, U.S.S.R.

Filed Dec. 20, 1972, Ser. No. 316,708
Int. Cl. B66c *23/12*
U.S. Cl. 212—3 **2 Claims**



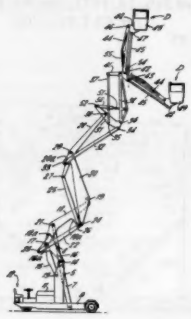
The crane boom is hinged to a frame on which is mounted a winch operating the boom through a pulley tackle. The fixed pulleys of the boom tackle are mounted on the crane frame and the movable pulleys thereof are linked to the boom head. The boom tackle has auxiliary pulleys mounted on symmetrically positioned brackets pivoted to the crane frame parallel to the boom luffing plane. The rope is reeved so that its parts connecting the movable and fixed pulleys run parallel to the boom luffing plane and the auxiliary pulleys are each connected to the movable pulleys by the same number of rope parts. Another winch mounted on the frame raises and lowers the load. The drums of both winches are kinematically interconnected so that they simultaneously rotate in opposite directions, whereby the boom is elevated while the load is lowered. Thus, the load is moved in a true horizontal path while the reach of the crane boom is varied.

3,828,939

THREE-STAGE SELF-PROPELLED CRANE

Jacques Tranchero, Via Villanovetta, 2 Piasco, Italy

Filed June 6, 1973, Ser. No. 367,463
Int. Cl. B66c *23/14*
U.S. Cl. 212—8 **5 Claims**



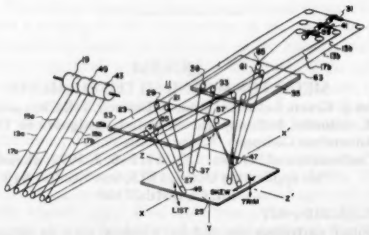
The present invention relates to a crane that is provided with a principal or first hydraulic lifting stage, co-operating with a first lever system and with two secondary hydraulic stages for controlling the movement of two further lever systems that are mutually pivoted with respect to each other and with respect to the first stage through an intermediate lever mechanism which does not have its own hydraulic plunger and which is actuated in movement by the movement of the first lifting stage.

3,828,940

SPREADER LIST, TRIM AND SKEW ADJUSTMENT MEANS

George W. Cooper, San Leandro, Calif., assignor to Fruehauf Corporation, Detroit, Mich.

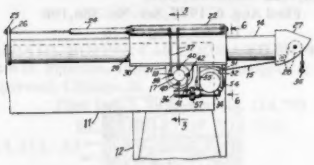
Filed Sept. 3, 1971, Ser. No. 177,711
Int. Cl. B66c *17/20*
U.S. Cl. 212—14 **4 Claims**



A spreader list, trim, and skew adjustment system for a variable centers rope suspension system used on a gantry crane in-

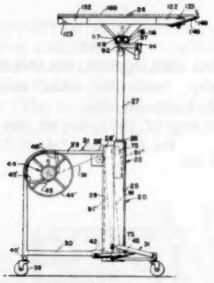
cluding individual rope operating means located at the outer end of the boom of the crane connected to the load and sway-stop lines to permit adjustment of the lines.

3,828,941
HYDRAULIC JIB
John Coutinho, Chester Tnpk., Auburn, N.H. 03032
Filed Apr. 10, 1973, Ser. No. 349,765
Int. Cl. B66c *23/68*
U.S. Cl. 212—144 **10 Claims**



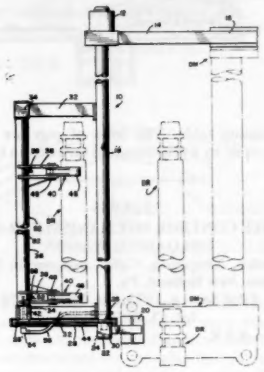
A dielectric jib at the end of a hydraulically operated boom in which the jib is slidably supported in a sleeve, the sleeve being connected to a rotatable bushing surrounding a shaft extending to the boom. The bushing is connected on the inside of the boom to a hydraulic actuator for rotation. The bushing is also drilled with hydraulic passages for providing hydraulic power to operate a winch for raising and lowering a hook on the end of the jib and also for powering an actuator such as a double acting hydraulic piston for sliding the jib back and forth in the sleeve.

3,828,942
PANEL LIFTING DEVICE
Roland O. Young, 1208 Chestnut, Grand Porks, N. Dak. 58201
Filed Apr. 27, 1972, Ser. No. 248,129
Int. Cl. B66f *9/12*
U.S. Cl. 214—1 SW **4 Claims**



The invention comprises a lifting device for lifting ceiling panels into place flush against the ceiling beams for installation. The device has a supporting structure for supporting the panel and telescoping sleeves for raising and lowering the panels. The device also has a cable and pulley connecting structure for telescoping the sleeves with a drum or spool for winding the cable and a brake mechanism for the drum. The supporting structure may also be pivoted at an angle and carry thereon panels for installation against the upright wall framework.

3,828,943
DRILL ROD HANDLING APPARATUS
Karlheinz A. Simon, Seattle, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Oct. 15, 1973, Ser. No. 406,606
Int. Cl. E21b *19/00*
U.S. Cl. 214—2.5 **15 Claims**

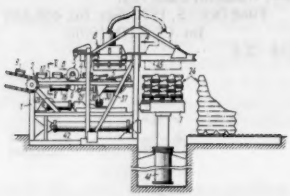


The apparatus comprises means, for use with an earth drilling machine, effecting powered handling of drill rods for moving drill rods from an earth drilling machine to a horizontal storage position, and vice versa. The primary components of the apparatus comprise powered, parallel, double-linkage arms for moving drill rods, by means of gripping assemblies carried by the arms, in a vertical disposition, or in inclined dispositions: from vertical to 30° from horizontal, through an arc between a location alongside the machine, and a location within the machine (for alignment therein of the drill rod with a drill head or drill rod string). Included is an elevating, powered, tilt cradle having a platform for receiving a drill rod horizontally thereupon. The cradle has uprights set on one side thereof to prevent drill rods from sliding off the platform. Additionally, the cradle has a stop which abuts the lowermost portion of the drill rod to prevent axial displacement of the rod on the cradle. The stop also correctly positions the drill rod, longitudinally on the cradle, for a proper clasping of the drill rod by the gripping assemblies. Further, the cradle has a two-part, pin-type closure, webbed strap to aid in securing the cradle-borne rods.

3,828,944
PIG PILING DEVICE
Vasily Vasilievich Turchaninov, ulitsa 3 Sovetskaya, 69, kv. 58; Jury Petrovich Shelkovnikov, ulitsa Dekabrskikh Sobyty, 65, kv. 30; Gennady Maximovich Machkov, ulitsa Studencheskaya, 16, kv. 18, and Oleg Alexandrovich Korolev, ulitsa 5 Armia, 46, kv. 11, all of Irkutsk, U.S.S.R.
Filed May 4, 1973, Ser. No. 357,277
Claims priority, application U.S.S.R., May 5, 1972, 1781748
Int. Cl. B65g *57/00*
U.S. Cl. 214—6.5 **6 Claims**

A pig-piling device comprising a first conveyor delivering pigs to a manipulator and onto an intermediate support. An accumulating table is located after the intermediate support in the direction of regular operation and is mounted with provision for vertical movement for connecting the pig it carries with the pig located on the intermediate support. A second

conveyor is installed below the accumulating table which shifts the interlocked pigs from the intermediate support onto

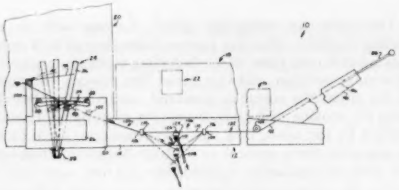


the accumulating table. The rows of pigs are carried and formed into a pile by a grip mounted on a driven trolley.

3,828,945
REMOTE CONTROL MECHANISM FOR A BALE UNLOADING WAGON

Gene R. Butler, Kingsburg, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 4, 1973, Ser. No. 393,878
Int. Cl. B65g *60/00*
U.S. Cl. 214—8.5 R **8 Claims**

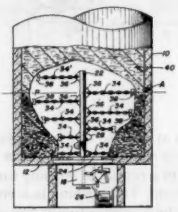


A remote control mechanism is provided which may be utilized by the operator of a bale wagon to control the operation of a bale unloading means while the operator is at a location remote from the wagon, such as in a hay mow of a barn or on the top of a stack of bales. Heretofore, in order to control the bale unloading operation, the operator must have been located at the side of the wagon in order to directly move a lever for actuating the bale unloading means or located at the front of the wagon in order to pull forwardly on a control rod which moves the lever by pulling forwardly a control cable being attached at one end to the lever and at the opposite end to the control rod. The mechanism includes a rope or the like secured at one end to an intermediate portion of the control cable and being of a length capable of reaching to the operator at the location remote from the wagon, and a pair of guide tabs each of which are secured to a chassis of the wagon respectively adjacent one of the opposing ends of the intermediate portion of the control cable and through each of which runs the control cable. The one of the tabs nearer to the location of the lever confines one end portion of the control cable, respectively extending from one of the opposing ends of the intermediate portion of the cable to the one end of the cable, to movement in the aforementioned forwardly direction when the rope is pulled in a direction lateral to the forwardly direction of the cable which pulls the intermediate portion in the same lateral direction. The other of the tabs nearer to the control rod of the wagon restricts the other end portion of the cable, respectively extending from the other of the opposing ends of the intermediate portion of the cable to the opposite end of the cable, from movement in the aforementioned lateral direction when the rope is pulled in the lateral direction which pulls the intermediate portion of the cable in the same lateral direction and thereby pulls the one end portion of the cable in the forwardly direction and moves the lever. Preferably, a loop is clamped in the intermediate portion of the control cable to which is fastened a releasable latch on the one end of the rope whereby when the operator completes the unloading operation the rope may be released from its securement with the loop of the control cable.

3,828,946
BOTTOM UNLOADING MEANS FOR SILO

James W. Lepley, Smithville, Ohio, assignor to Flying Dutchman, Inc., Smithville, Ohio

Filed Aug. 6, 1973, Ser. No. 386,196
Int. Cl. B65g *65/46*
U.S. Cl. 214—17 DA **6 Claims**

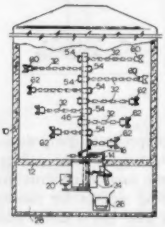


A silo arranged for unloading from the bottom by means of a central auger extending upwardly from the bottom a distance greater than the interior radius of the silo and flexible dislodging members connected at one end to said auger at vertically spaced locations between the upper and lower ends thereof, the length of said dislodging members being shortest at the lowermost member and increasing progressively among the members toward the uppermost, the longest member being next to the uppermost and the outer end of the longest being spaced from the interior of the silo wall at least 1 foot when fully extended to provide an arched ceiling in the cavity formed in the silage by said dislodging members and auger and form an annular wall of silage around the outermost boundry of the cavity which is not unduly compressed and flakes away to permit gradual descent of the mass of silage above the cavity.

3,828,947
MATERIAL DISLODGING MEANS FOR SILO

James W. Lepley, Smithville, Ohio, assignor to Flying Dutchman, Inc., Smithville, Ohio

Filed Aug. 17, 1973, Ser. No. 389,141
Int. Cl. B65g *65/46*
U.S. Cl. 214—17 DA **13 Claims**



Material dislodging means for a bottom unloading type silo having a central vertical shaft projecting upwardly from the

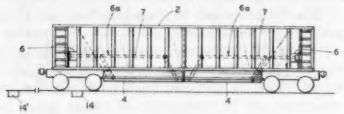
bottom adjacent an outlet opening therein and including a series of chains connected at one end to said shaft in vertically spaced relationship and of progressively greater length with the shortest being lowermost, said connections comprising openings extending diametrically through said shaft to receive said ends of said chains to provide effective, long lasting flexible connections for said chains. The outer ends of the chains have digging and raking elements connected thereto by means of sockets on said elements which receive at least the terminal outer link of each chain. Pin means connect the opposite ends of the chains respectively within said openings in said shaft and said sockets on said elements.

3,828,948

PNEUMATIC HOPPER CAR DOOR ACTUATING SYSTEM

William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 214,795
Int. Cl. B61d *7/08, 7/28, 7/30*
U.S. Cl. 214—63 **15 Claims**



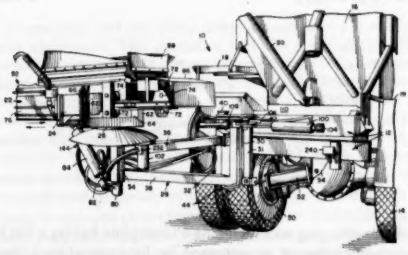
In a hopper car arrangement, a hopper car door pneumatic actuating system including the standard air reservoir tank and a railroad car actuated ground-mounted induction coil, and a solenoid valve energized thereby, for opening the hopper doors, and a railroad car actuated ground-mounted induction coil and a solenoid valve for closing the doors whereby a supply valve and a four-way pilot valve is actuated to supply pressurized air from the tank to selectively operate a two-way acting air cylinder attendant to opening and closing of the hopper doors, and a latch for holding the supply valve open until the doors are closed and a flow control check valve in the train-line adjacent the air receiver tank to block off any rapid drop in pressure in the air reservoir tank to prevent application of the air brakes when operating the hopper doors.

3,828,949

POWER-ACTUATED DISTRIBUTING CONVEYOR SYSTEM FOR A READY-MIX CONCRETE TRUCK

Francis T. Spellman, Blue Springs, Mo., assignor to Symons Corporation, Des Plaines, Ill.

Filed May 23, 1973, Ser. No. 362,950
Int. Cl. B60p *1/36;* **B28c** *7/16*
U.S. Cl. 214—83.26 **20 Claims**



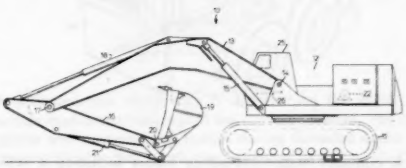
A distributing conveyor system embodying a pivot arm hingedly connected to the rear end of a ready-mix concrete truck, a rotary carrier frame on the distal end of the pivot arm, and a belt-type conveyor including a boom which is slidable endwise through the carrier frame, together with hydraulically powered means for swinging the pivot arm toward and away from the truck, and for rotating the carrier frame.

3,828,950

UNIVERSALLY MOVABLE CONTROL LEVER ASSEMBLY

Herbert A. Schwantes, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Aug. 24, 1972, Ser. No. 283,477
Int. Cl. B66f *9/00*
U.S. Cl. 214—138 R **14 Claims**



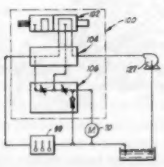
A backhoe comprises a horizontally rotatable and vertically pivotable boom, a vertically pivotable stick mounted on the boom and a vertically pivotable dipper mounted on the stick, all of which components are movable by hydraulic actuators in response to operation of four control valves. The four control valves are independently operated by four generally parallel control rods which are axially movable by two separate universally movable operator's manual control levers located on a control platform on the backhoe, along with other operator controls. Each of the two universally movable manual control levers is pivotably movable in a first plane to move one backhoe component; in a second plane (normal to the first) to move a second backhoe component; and in other planes transverse to the first and second planes to effect simultaneous but proportional movement of the two backhoe components.

3,828,951

PROPORTIONAL FLUID DISTRIBUTION ASSEMBLY FOR BACK HOE HAVING RECIPROCATING TEETH

Ancel H. Fleming, 3715 Tulsa, Oklahoma City, Okla. 73112

Filed Feb. 15, 1973, Ser. No. 332,727
Int. Cl. E02f *3/32*
U.S. Cl. 214—138 R **5 Claims**



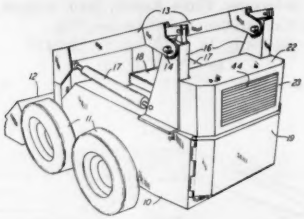
A back hoe apparatus including an articulated boom having a bucket affixed to one end of the boom, and hydraulic power fluid conveying lines extending along the boom to the bucket. Mounted in the bottom of the bucket are a hydraulic motor, a plurality of reciprocably mounted teeth, and means drivingly interconnecting the motor and the teeth. A fluid distribution assembly is provided between a source of hydraulic fluid and the hydraulic motor for the purpose of proportionately distributing hydraulic power fluid to the hydraulic motor to drive the teeth in reciprocation, and the hydraulic cylinder employed to roll or pivot the bucket about the end of the articulated boom upon which it is mounted. The fluid distribution assembly may be generally described as including three major subassemblies; a solenoid valve, an adapter block and a flow divider block.

3,828,952

COMPACT MATERIAL-HANDLING LOADER

Maurice Klee, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed June 19, 1972, Ser. No. 264,263
Int. Cl. B66f 9/00
U.S. Cl. 214—140 2 Claims



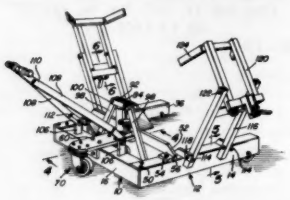
A compact material-handling loader including a vehicle body having ground supporting wheels thereon and having upstanding stanchions and arms pivotally connected thereto and supporting a loader bucket forwardly of the vehicle. An operator's seat is disposed between the pivotal arms, and an engine is at the lower rear end of the vehicle body. The vehicle body defines a compartment above the engine, and a radiator is disposed in the compartment but neither the radiator nor the vehicle body extends up to the upper ends of the stanchions, so the low silhoutte and compact nature of the compact loader is retained while the engine is a water-cooled engine and has a water-cooling type of radiator connected therewith.

3,828,953

TRACTOR WHEEL DOLLY

Frank Reznicek, 1412 7th St., Columbus, Nebr. 68601

Filed Oct. 5, 1972, Ser. No. 295,189
Int. Cl. B65g 7/00
U.S. Cl. 214—332 6 Claims



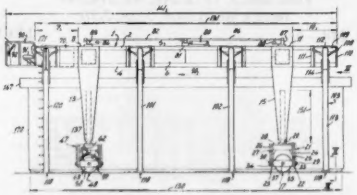
A generally U-shaped horizontally disposed dolly including support wheels on the free ends of the leg portions of the dolly journaled for rotation about axes extending between the leg portions and an additional caster wheel assembly journaled from the mid-portion of the bight portion of the dolly extending between the base ends of the legs thereof. A pair of downwardly inclined lifting flaps are pivotally supported from the adjacent sides of the legs and are downwardly convergent and motor means is operatively connected between the U-shaped portion of the dolly at a location disposed in at least general vertical alignment with the caster wheel. The motor means is operatively connected to a vertically shiftable lifting head and downwardly divergent connecting bars are pivotally secured to opposite sides of the lifting head at their upper ends and to the free swinging adjacent lower marginal portions of the lifting flaps at their lower ends, whereby the motor means may be utilized to swing the free swinging edge portions of the flaps upwardly toward horizontal positions. In this manner, a large heavy wheel in upright position with its lower peripheral portion loosely embraced by the flaps may be engaged by the latter and lifted clear of the surface upon which the dolly is disposed.

3,828,954

MACHINES FOR DISPLACING BUILDING SECTIONS

Cornelis van der Lely, 7 Bruschenrain, Zug, and Hendricus Jacobus Cornelis Nieuwenhoven, Hirssattelweg, 6340, Baar, both of Switzerland

Filed Feb. 16, 1973, Ser. No. 333,030
Claims priority, application Netherlands, Feb. 17, 1972, 7202064
Int. Cl. B60p 3/00
U.S. Cl. 214—392 46 Claims



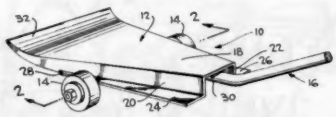
A machine for displacing building sections of parallelepiped configuration intended for construction of prefabricated buildings which has a main girder and four extensible legs adapted to straddle a section with the girder above the section. Four carrying arms each having generally the configuration of an inverted "L" depend from each side of the girder, are pivotedly connected to the girder, and through hydraulic cylinders are selectively movable relative thereto. At the base of each arm is a strip extending inwardly having responsive means for signalling when the strip is properly engaged under a section. Each leg has a group of steerable ground wheels with the forward groups being powered by hydraulic motors, the steering, motive and carrying functions of the machine also being part of a hydraulic system and controlled from a driver's platform in the forward part of the machine, signals from the responsive means on each strip being displayed at the driver's platform.

3,828,955

TIRE CHANGING TOOL

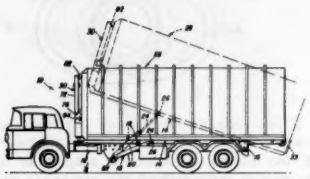
Andrew D. Harkey, Rt. 2, Caddo, Okla. 74729

Filed Jan. 3, 1973, Ser. No. 320,728
Int. Cl. B60b 29/00
U.S. Cl. 214—332 1 Claim



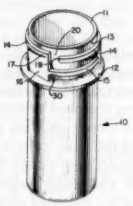
A tire changing tool including a lever plate having a flat surface terminating at an upturned lip for supporting a tire, a solid handle extending upwardly from the lever plate, and a pair of wheel assemblies mounting the lever plate and having soft rubber tires to resist rotation about their axles such that the tire changing tool will not freely roll.

3,828,956
EJECTION APPARATUS AND METHOD FOR EMPTYING REFUSE CONTAINERS
Harry H. Dubo, 36 Yates Dr., Hamilton, Ontario, Canada
Filed Aug. 3, 1972, Ser. No. 277,525
Int. Cl. B60p *1/16*
U.S. Cl. 214—510 **10 Claims**



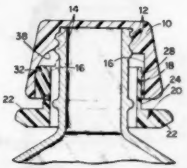
A refuse dumping apparatus having a pivotal and displaceable container in which a normally stored ejector blade can be disposed in the rearward path of the container and in which power means can move the container onto the rearwardly directed ejector blade causing impacted refuse to be pushed toward the rearward, dump opening of the refuse container; the ejector blade being fixed in either an operative or stored position; being raised by movement of the container and a cooperating cam means or by mechanical means such as a fluid motor, screw or the like; and the ejector blade being extensible by power means.

3,828,957
CONTAINER WITH SAFETY CLOSURE
Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed Aug. 2, 1972, Ser. No. 277,418
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **5 Claims**



A container and one-piece safety closure which is substantially childproof. The container includes a cylindrical neck portion having a pair of opposed, semi-circular, discontinuous upper threads and a pair of opposed, discontinuous lower threads. The proximate ends of opposed upper threads and lower threads are attached to a pair of opposed, vertically extending stop members formed integrally on the neck of the container. The distal ends of each of the upper and lower thread members terminate short of the opposed stop member. A cup-shaped, generally cylindrical cap is provided which has a pair of opposed projections on its interior wall adjacent the lower periphery thereof. The projections are adapted to be received between the upper and lower thread members and, upon counterclockwise movement followed by clockwise movement, lock the closure on the container neck. Reversal of the sequence with applied pressure permits the removal of the safety cap from the container.

3,828,958
SAFETY BOTTLE CAP
John J. Shannon, 425 Foster Rd., Tewksbury, Mass. 01872
Filed Nov. 20, 1972, Ser. No. 307,818
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **9 Claims**



A threaded-type bottle cap is lockable on the bottle to preclude inadvertent removal of the cap as by a child. The cap is usable with conventional bottles having threaded necks. It includes a slidable ring which may be moved axially on the cap when the cap is screwed on the bottle, which motion of the ring causes a detent to engage the end of the lower thread on the bottle and precluding rotation and, therefore, removal of the cap.

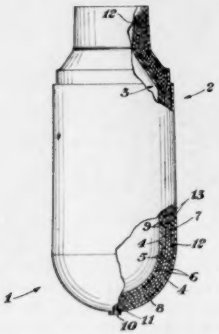
3,828,959
SAFETY CAP OPERATED BY A KEY
Nathan B. Lerner, Chicago, Ill., assignor to W. Braun Company, Chicago, Ill.
Filed Jan. 12, 1973, Ser. No. 323,040
Int. Cl. A61j *1/00*; **B65d** *55/02*
U.S. Cl. 215—9 **10 Claims**

A closure cap in combination with a container in which the container is provided with a shoulder having a key slot and in which the cap is rotatably supported on the container with the bottom edge of the cap having a key slot and in which the only way to remove the cap from the container is to position the two key slots relative to each other so that a key may be inserted into said cooperating key slots and the cap may be pried off only by turning the key.

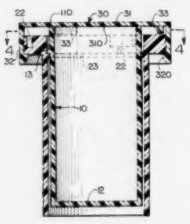
3,828,960
HEAT INSULATING CONTAINER HAVING PLASTIC WALLS RETAINING VACUUM
Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 10, 1972, Ser. No. 305,451
Int. Cl. A47j *41/02*
U.S. Cl. 215—13 R **10 Claims**

A container having a double wall construction of a structural plastic material is provided with improved thermal insulative properties by (1) metallizing at least one surface of each wall of the container with metal such as silver to provide a

light reflective surface and to produce a partial barrier to atmospheric gases, (2) coating the metallized surface with a barrier plastic such as saran, (3) evacuating the space enclosed by the walls of the container, and (4) adding to the evacuated space a gas-absorbing material.



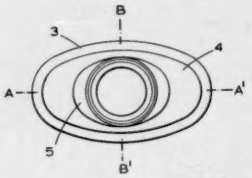
3,828,961
SAFETY PILL CONTAINERS
Gerald F. Lewis, 1850-Columbia, Berkley, Mich. 48072
Filed Sept. 15, 1972, Ser. No. 289,302
Int. Cl. A45c *13/10*; **B65d** *83/04*
U.S. Cl. 215—223 **8 Claims**



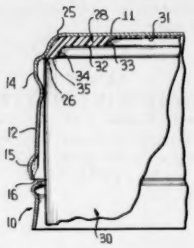
A safety pill container for the protection of children and others from obtaining free or easy access to medicinal items such as pills, capsules and the like whereby to prevent the ingestion of harmful and sometimes fatal medicines, either capriciously or accidentally.

3,828,962
BOTTLE CLOSURE
Herbert Ashley Atkins, Maidenhead, England, assignor to Beecham Group Limited, Brentford, Middlesex, England
Filed May 19, 1972, Ser. No. 254,923
Claims priority, application Great Britain, May 20, 1971, 16053/71
Int. Cl. B65d *41/06, 41/22*
U.S. Cl. 215—321 **6 Claims**

A bottle and cap combination wherein the upper region of the body of the bottle is elliptical or oblong, the neck of the bottle is elliptical and is joined to the body by a shoulder portion having sloping sides; and the cap comprises a hollow cup-shaped member having a downwardly-extending skirt a snap-lock liquid-tight sealing arrangement internal of the skirt and at least one internal rib which is adapted to ride over the shoulder portion and which rib also serves as a guide means to position the cap on the bottle.



3,828,963
RECESSED CROWN CAP
Jens L. Moller, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 11, 1972, Ser. No. 225,508
Int. Cl. B65d *53/06*
U.S. Cl. 215—337 **7 Claims**

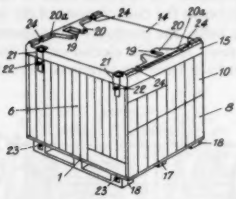


This disclosure relates to a roll-on closure for bottles wherein an end panel is connected to a depending skirt through a radiused portion and a transition portion with the radiused portion being recessed relative to the skirt. The cap configuration permits a liner molding punch of the necessary diameter to fully mold the liner to be inserted into the closure. It further permits the molding punch to be substantially centered relative to the end panel whereby a portion of the molded liner engaging the radiused portion is of a substantially uniformed thickness and the thickness thereof may be held to a minimum while still capable of producing optimum sealing results. The roll-on closure construction and liner configuration permits the closure to be applied utilizing much less than normal pressure.

3,828,964
POLYVALENT PLIABLE CONTAINER
Pierre Edmond Michel Bonnot, 3 Place Marine 78, Maisons-Laffitte, France
Filed Apr. 20, 1972, Ser. No. 246,023
Int. Cl. B65d *87/00*
U.S. Cl. 220—1.5 **7 Claims**

A folding container that is used by all forms of transportion, such as rail, ship and air including a floorboard provided with means of assembly for the placement of side and end panels to thus form an enclosure, the rigidity of which is assured by placing a top on the structure obtained. The surface of this top is embossed to correspond with reliefs and spaces on the bot-

tom of the floorboard facilitating the stacking of several containers either folded or unfolded for use. The resulting folding,



multipurpose container is compact in size and is strong enough to resist the great accelerations and decelerations of air travel.

3,828,965

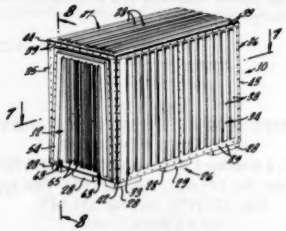
CONTAINER HAVING RESILIENT SUPPORT MEANS

James G. Yarbrough, Mission Viejo, Calif., assignor to Jet Forwarding, Inc., Santa Ana, Calif.

Filed Feb. 29, 1972, Ser. No. 230,238

Int. Cl. B65j *1/02*

U.S. Cl. 220—1.5 **7 Claims**



A container including a metal frame over which are plastic sheets secured to it by fasteners, a bottom support for the container including spaced pads filled with foam material capable of withstanding compression loads and providing shock absorbing properties, the door of the container having a peripheral flange which overlaps a comparable flange around the door opening, the flanges having convergent portions so that they can be wedged together, with a gasket providing a seal, while latches hold the door in the secured position.

3,828,966

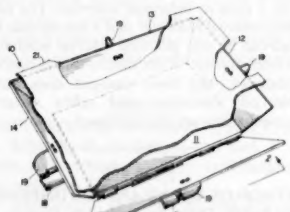
COLLAPSIBLE BAKING PAN

John J. Martin, Lafayette Towers, 10a, Norfolk, Va. 23508

Filed Nov. 8, 1972, Ser. No. 304,820

Int. Cl. B65d *7/24*

U.S. Cl. 220—7 **2 Claims**



This invention relates to a collapsible baking pan having a disposable liner of aluminum foil. The pan can be collapsed to a substantially flat position for ease of packing.

3,828,967

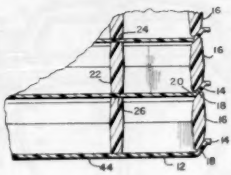
INSULATOR DEVICE

Robert H. Grabhorn, Indianapolis, and Norman A. Westcott, Wanamaker, both of Ind., assignors to Westcott & Grabhorn, Ltd., Indianapolis, Ind.

Filed Nov. 20, 1972, Ser. No. 307,997

Int. Cl. A47g *19/00;* **B65d** *21/00, 25/18*

U.S. Cl. 220—23.86 **12 Claims**



A plastic, heat insulating ring whose lower perimeter is formed with an exterior bevel surface proportioned and designed to conform to, and be supported upon, the upwardly and outwardly flared lip of a conventional serving tray and whose upper perimeter is formed with a corresponding interior bevel surface proportioned and designed to conform to and support the external surface of such a tray lip, and a transverse divider within the ring which, in some instances, may be selectively positioned at various locations within the ring, and in some instances may be nonrectilinear. In one embodiment, the ring is an integral mold of urethane foam with a heat-formed sealing skin and in another embodiment it may be integrated from mating molded plastic shells filled with such foam and subsequently welded or otherwise secured together.

3,828,968

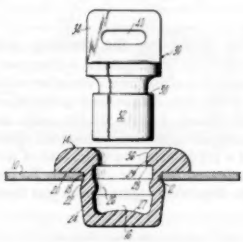
CLOSURE PLUG

Eugene Kask, Willimantic, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Mar. 31, 1972, Ser. No. 240,133

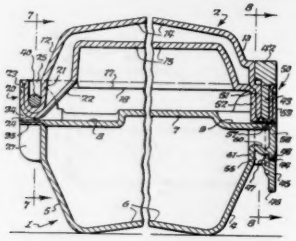
Int. Cl. B65d *39/12;* **F611** *55/12*

U.S. Cl. 220—24.5 **7 Claims**



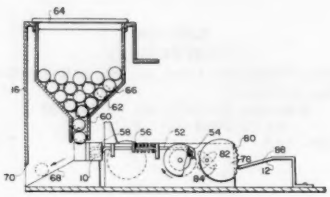
A closure plug is presented having a flexible hollow cup and a rigid insert adapted to form an interference fit with the interior of the cup whereby the cup is expanded into locking engagement with an opening to be sealed. The rigid insert physically displaces a contoured segment on the interior of the cup whereby the outer surface is brought into locking engagement with the opening to be sealed. A shoulder on the flexible cup retains the rigid insert in place, the shoulder being displaceable to allow removal of the rigid insert.

3,828,969
PLASTIC CONTAINER
Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.
Division of Ser. No. 9,529, Feb. 9, 1970. This application Oct. 4, 1971, Ser. No. 186,356
Int. Cl. B65d *43/16*
U.S. Cl. 220—31 S 11 Claims



A plastic container having blow-molded cover and body parts and compression molded interfitting hinge parts formed integral therewith providing hinge pin bearing sections of double wall thickness. A latch also is provided.

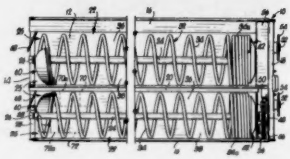
3,828,970
COMBINATION ARTICLE DISPENSING-AMUSEMENT DEVICE
Hideyuki Yamamoto, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Mar. 20, 1973, Ser. No. 342,991
Int. Cl. A24f *15/04*
U.S. Cl. 221—24 13 Claims



A device for simulating the packing and rolling of cigarettes, after which a real cigarette is dispensed. The device consists of a casing provided with a chamber within which the real cigarettes are stored. As the user actuates a motor within the casing, mechanism visible to the user simulating the packing and rolling of cigarettes is rendered operative through a gear train. At a predetermined time, one of the cigarettes is automatically released from the chamber. To the user, it thus appears that the dispensed cigarette has just been packed and rolled.

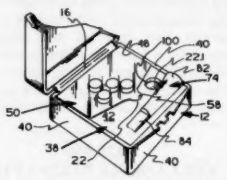
3,828,971
DIVIDED SHELF STRUCTURE FOR HELIX TYPE PRODUCT DISPENSING MACHINES
Elmer Bradley Offutt, Independence, and Edward Babich, Kansas City, both of Mo., assignors to The Vendo Company, Kansas City, Mo.
Filed June 27, 1973, Ser. No. 374,270
Int. Cl. G07f *11/36*
U.S. Cl. 221—75 4 Claims

The top-loading drawer assembly of a helix-type dispensing machine has a vertical divider extending through the center of the helix to separate the compartment controlled by the helix into a pair of adjacent sections on opposite sides of the helix. Two rows of products, on opposite sides of the divider, may thus be filled between the convolutions of the helix, and upon rotation of the helix, the products are dispensed alternately from opposite rows. A special ejector on the final convolution of the helix, set back from the terminus thereof, assures posi-



tive release of the products from opposite sides of the divider during successive 180° rotating cycles of the helix, and a resilient deflecting finger for the rearwardly leaning products on one side of the divider cooperates with the ejector to prevent tumbling of such products as they are dispensed. The forwardly leaning products on the opposite side of the divider topple from the drawer assembly at a point spaced rearwardly from the discharge end thereof.

3,828,972
PILL DISPENSER WITH CARTRIDGE AND PILL ADVANCED INDICATOR
Louis Bender, 4 Heather Ln., Scotch Plains, N.J. 07076
Division of Ser. No. 189,647, Oct. 15, 1971. This application Feb. 12, 1973, Ser. No. 331,643
Int. Cl. B65d *83/04*
U.S. Cl. 221—197 11 Claims

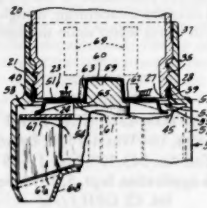


Mechanisms are disclosed for storing pills and dispensing them one at a time at indicated intervals. The dispenser includes a time interval read-out, and a mechanism for advancing the read-out by one pill time interval whenever a pill is withdrawn from storage. If the mechanism is operated but no pill is withdrawn, the time read-out does not advance. Replaceable pill cartridges and safety covers for the dispensing mechanism are also disclosed.

3,828,973
METHOD OF AND MEANS FOR DISPENSING
Peter Leslie Birrell, Delta, Br. Columbia, Canada, assignor to The Cornelius Company, Golden Valley, Minn.
Filed Oct. 25, 1972, Ser. No. 300,505
Int. Cl. B67b *7/12*
U.S. Cl. 222—1 40 Claims

Method and means for dispensing from replaceable containers provided with diaphragm-like closures, wherein the

closure is movably controlled to control the flow of contents from the container. Several forms of dispensers are provided,



adapted for containers for flowable particulate material, liquids, or gas. Several forms of closures especially adapted therefor are also disclosed.

3,828,974

PROCESS FOR THE EMERGENCY INTERRUPTION OF THE FLOW OF MELT IN A GRAVITY CASTING PLANT

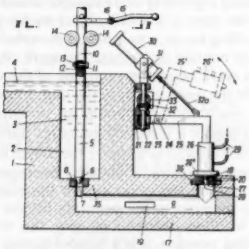
Oskar Tenner, Rossatz nr. Niederosterr, Austria, assignor to Gravicast Patentverwertungsgesellschaft m.b.H.

Filed Jan. 11, 1973, Ser. No. 322,627

Claims priority, application Austria, Jan. 13, 1972, 286/71

Int. Cl. B22d *37/00*

U.S. Cl. 222—1 **5 Claims**



In a gravity casting plant the melt is dammed up in a supply chamber up to a level which is higher than the level of the mouth of a casting nozzle. The melt flows from the supply chamber into an oblong equalization chamber and from this into the casting nozzle, and the flow of melt when operating the casting plant under normal conditions is controlled by a valve situated between the supply chamber and the equalization chamber. To avoid undesired outflow of melt from the casting nozzle at least the melt in the region of the mouth of the casting nozzle is cooled until same melt is solidified. A cooling member having an internal cooling system is provided on the nozzle to provide for the necessary cooling thereof.

3,828,975

DISPENSER FOR WASHING APPARATUS

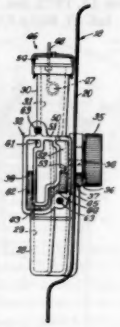
William F. Robandt, II, St. Joseph, and Jack F. Clearman, Stevensville, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed June 4, 1973, Ser. No. 366,371

Int. Cl. B67d *5/30*

U.S. Cl. 222—70 **11 Claims**

A washing apparatus such as a dishwasher having a dispenser for dispensing treating liquid such as a rinse additive at a preselected time in the dishwashing cycle. The dispenser is arranged to measure a preselected quantity of the additive as an incident of moving the dishwasher door between opened and closed positions and to dispense the preselected quantity subsequently at the desired time in the washing cycle. Pressure-producing means are provided for urging the treating



liquid into the washing chamber in effecting the dispensing operation. The liquid is effectively pumped upwardly by the pressure-producing means to an outlet opening to the washing chamber.

3,828,976

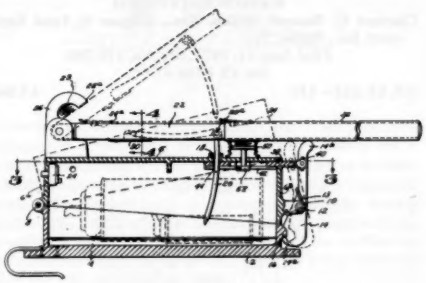
METHOD AND APPARATUS FOR DEGASSING AEROSOL CANS AND THE LIKE

Wilson S. Sidelinker, 111 Forest St., Reading, Mass. 01867

Filed Mar. 2, 1973, Ser. No. 337,436

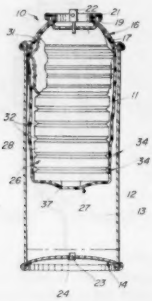
Int. Cl. B67b *7/24*

U.S. Cl. 222—83.5 **5 Claims**



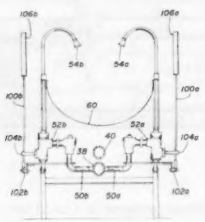
Release of residual pressure in a used aerosol can or similar pressurized enclosure is carried out in a closed container in a controlled manner to avoid safety hazards. A collapsible puncture element adjustably received in an operating handle supported on the container is arranged to be guided into the container and to pierce the aerosol can. Pressurized gas leaving the aerosol can is momentarily confined and allowed to discharge through suitable vent means. The container is provided with a hinged top section fastened to a lower can-supporting section by a latch mechanism. Safety locking means located through the hinged top section prevents disengagement of the latch mechanism while gas pressures of significantly dangerous nature are present in the container after the aerosol can is punctured.

3,828,977
COMPARTMENT BAG ASSEMBLY FOR DISPENSING CONTAINERS
Jerome A. Borchert, Glenwood, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 14, 1972, Ser. No. 262,919
Int. Cl. B65d *83/14*
U.S. Cl. 222—95 **5 Claims**



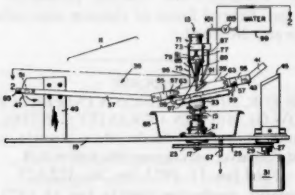
A product dispensing container of the type including a collapsible product containing a bag assembly which is disposed within a rigid container and defines a chamber therein. The chamber is filled with a propellant. A valve dispensing means communicates with the bag assembly for discharging the product therefrom under the force of the propellant. The product containing bag assembly includes a compartment bag constructed so as to be only axially collapsible when subjected to the radial and axial forces of the propellant. The bag assembly further includes a barrier bag or sheath which encloses the compartment bag. The barrier bag is made from an impermeable film material and is flexible so as not to influence the axial collapse of the compartment bag.

3,828,978
HAND WASH SYSTEM
Clarence G. Dawson, Dallas, Tex., assignor to Food Equipment, Inc., Dallas, Tex.
Filed Aug. 11, 1971, Ser. No. 170,788
Int. Cl. F16k *31/00*
U.S. Cl. 222—110 **4 Claims**



The specification discloses a hand wash system for use by personnel working along a food processing line such as the eviscerating trough of a fowl processing plant. A reservoir supplies warm water through a fluid manifold which extends along the eviscerating trough. A return line may be connected between the end of the manifold to the reservoir for recycling unused water. A plurality of wash stations are spaced along both sides of the eviscerating trough and include conduits which communicate with the manifold. A self-limiting valve is connected in each of the conduits and is operable to allow a predetermined amount of warm water to pass therethrough. An actuating lever is connected to each of the valves and is positioned for movement by an uncontaminated portion of the bodies of the personnel, such as the arms, legs or feet of the personnel. Nozzles are connected to the output of the valves and are disposed over the eviscerating trough for dispensing a metered amount of warm water upon the operation of the actuating levers.

3,828,979
AUTOMATIC GRIT FEED
Joseph C. Sharbaugh, 164 Warrior Rd., Drexel Hill, Pa. 19026
Division of Ser. No. 143,799, May 17, 1971, Pat. No. 3,739,531. This application Sept. 5, 1972, Ser. No. 286,072
Int. Cl. G01f *11/46*
U.S. Cl. 222—129 **5 Claims**

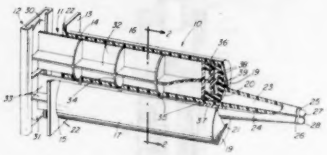


Lapidary apparatus for grinding rocks or stones into polished spheres, which are attractive works of art, comprising an automatic sphere grinder with automatic feeder, said apparatus including a grinding cup rotatable about a vertical axis and adapted to receive a work object to be ground into a sphere, a travelling boom, a pair of legs mounted on said boom and adapted to contact and rotate the work object, said legs contacting the work object on each side of the vertical axis of the cup to hold the work object in the cup, a motor crank arm connected to one end of the boom for reciprocably moving the boom and legs in a direction generally along the longitudinal axis of the boom so as to move the length of the legs over the work object to rotate it about a horizontal axis, a lift member mounted on the other end of the boom adapted to contact a stop member to momentarily lift the legs from the work object to allow the cup to spin the work object to another grinding position, a grit hopper having a feed port, a grit receiving member having an arcuate surface positioned below the feed port a distance such that when in normal position the arcuate surface receives a pile of grit having a positive angle of repose that shuts off the feed port, a shaft rotatably supporting the grit receiving member and having a handle extending downwardly therefrom of sufficient length to be heavy enough to support said arcuate surface in position beneath the feed port, a funnel mounted beneath the grit receiving member and over the work object, an actuating arm mounted on the boom and positioned so as to strike said handle to move the arcuate surface back and forth beneath the feed port to receive and dispense grit material into said funnel, and a water system with a water feed port positioned over the work object for feeding water thereto, said water feed port being positioned away from the funnel tube to prevent water from entering the funnel and clogging it with wet grit.

3,828,980
DISPENSER FOR PRECISELY METERED DISPENSING OF VISCOUS FLUIDS
Albert M. Creighton, Manchester, and William D. Devaney, Methuen, all of Mass., assignors to Chemical Development Corporation, Danvers, Mass.
Filed Nov. 6, 1972, Ser. No. 303,826
Int. Cl. B67d *5/42*
U.S. Cl. 222—137 **1 Claim**

A dispenser is disclosed for the precise metering of a plurality of viscous fluids, such as the components of an epoxy adhe-

sive in which small amounts to be metered are desired and the proportion of components is critical. The dispenser includes a cartridge, a plurality of pistons operatively located in cylindrical-compartments in the cartridge, and means for connecting the ends of the pistons and maintaining the pistons in alignment during dispensing. The cartridge includes a plurality of adjacent cylindrical compartments having adjoining walls, a rear wall at one end of the compartments and having annular openings therein of a diameter equal to the diameter of the respective cylindrical compartments, and forward end closures having orifices leasing through channels to adjacent nozzles. The pistons include a piston drive tab, longitudinal ribs



and radial ribs, and a piston head providing sealing means in engagement with the walls of its respective cylindrical compartment. An important aspect is that the longitudinal and radial ribs extend radially from the axis of the piston substantially as far as the radius of the respective cylindrical compartment, in order to reduce the possibility of misalignment of the pistons during dispensing. In addition, misalignment forces are also minimized by the provision of finger tabs on each side of the cartridge spaced equally from the mean thrust axis of the pistons and positioned adjacent to the rear wall of the cartridge.

3,828,981

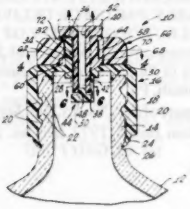
SAFETY DISPENSING DEVICE

Robert P. Linkletter, 875 Comstock, Los Angeles, Calif. 90024

Filed June 28, 1971, Ser. No. 157,326

Int. Cl. B67b *5/00*

U.S. Cl. 222—153 **23 Claims**



A dispensing device including a dispensing valve mounted on a container for reciprocation between open and closed positions and a rotary safety ring having means for normally holding the valve in the closed position to prevent dispensing of the contents of the container, but allowing the valve to be moved to the open position when the ring is in one preselected angular position relative to the valve.

3,828,982

SAFETY ACTUATOR FOR AEROSOL CONTAINERS

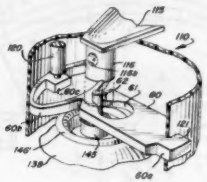
Carl J. Steigerwald, Wauconda, Ill., assignor to VCA Corporation, North Riverside, Ill.

Filed May 10, 1973, Ser. No. 359,203

Int. Cl. B65d *83/14*

U.S. Cl. 222—153 **10 Claims**

A child-proof or safety actuator for operating the valve assembly of an aerosol spray can is held in position on the can by engagement with the top of the can. The actuator consists of a vertical wall section and top walls and a depressible actuator assembly positioned in an opening defined in the top wall. A horizontally biased slide is disposed within the actuator cap and accessible through the side wall. The slide defines an



opening through which the actuator stem may pass when the slide is pressed to an operative position. The slide cooperates with the actuator to provide a two-step actuating operation requiring the sequential movement of the slide and depression of the actuator to dispense product through the simultaneous use of the thumb and index finger.

3,828,983

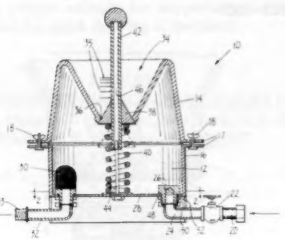
MIXING AND DISPENSING DEVICE

Leonard Russo, 177 Canal St., Apt. 18, San Rafael, Calif. 94901

Filed Dec. 6, 1971, Ser. No. 209,898

Int. Cl. B67d *5/58*

U.S. Cl. 222—190 **4 Claims**



A device, including a mixing chamber, that is adapted to be positioned in a water line between the water source and a dispersion mechanism such as a sprinkler. The device includes a manually operable mechanism for introducing a measured amount of chemical into a normally fluid-tight mixing chamber. The inflow of water is simultaneously dispersed into and agitated within the mixing chamber and the outflow of water restricted so that undissolved chemicals are not allowed to flow out with the irrigation water.

3,828,984

SILO DRAINING DEVICE

Bruno A. Gmuer, St. Gallen, Switzerland, assignor to Gebrueder Buehler AG, Uzwill, Switzerland

Filed July 16, 1973, Ser. No. 379,590

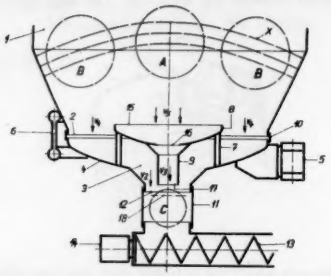
Claims priority, application Switzerland, July 18, 1972, 10744/72; June 21, 1973, 9004/73

Int. Cl. B65g *3/12*

U.S. Cl. 222—196 **16 Claims**

A silo draining or discharge device is shown including a vibration floor of generally frusto-conical shape, having a centrally located outlet or discharge opening, and a vibration generator fastened to the vibration floor. The vibration floor is supported so as to permit it to vibrate freely beneath the outlet

opening of a silo. A funnel-like device is mounted on the vibration floor for vibration therewith, with the circular inlet and outlet openings thereof coaxially aligned above the circu-



lar discharge opening of the vibration floor. Metering means are provided to selectively control the respective flows of material through and around the funnel-like device in order to obtain an even descent of material in the silo.

3,828,985

DOSING VALVE

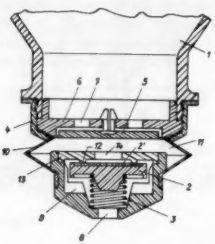
Claude Schindler, Geneva, Switzerland, assignor to Zyma S.A., Nyon, Switzerland

Filed June 26, 1972, Ser. No. 266,357

Claims priority, application Switzerland, July 6, 1971, 9903/71

Int. Cl. B67d *5/42*

U.S. Cl. 222—207 **6 Claims**



A dosing valve for liquid or pasty products includes a hollow valve body with an inner chamber, a normally open inlet communicating with a recipient of a product, and an outlet normally closed by a spring-urged clapper. Part of the body can be elastically deformed to reduce the volume of the chamber and compress the product therein to close the inlet, open the outlet and deliver a discrete dose of the product.

3,828,986

DISPENSING DEVICE WITH ABRUPT EJECTION TERMINATING MEANS

Oscar Roth, Zurich, Switzerland, assignor to Involva AG, Buenzen, Switzerland

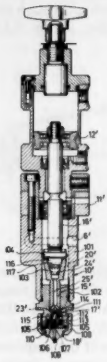
Continuation-in-part of Ser. No. 225,421, Feb. 11, 1972. This application Mar. 20, 1973, Ser. No. 343,141

Claims priority, application Switzerland, Mar. 22, 1972, 4298/72

Int. Cl. B67d *5/46*

U.S. Cl. 222—375 **7 Claims**

A piston rod extends longitudinally through a chamber of a cylinder, the latter being provided in one end wall with a dispensing nozzle. A piston surrounds and is slidable along the piston rod between a retracted position expelling matter through the nozzle, and a forward position. One or more passages are provided in the piston and/or piston rod and these passages connect opposite axial ends of the piston but are open only when the piston is in its forward position. A



supply of material to be dispensed communicates with the chamber rearwardly of the piston. An arrangement is provided for assuring that material expelled from the nozzle will be expelled with at least substantially constant pressure at all times, and includes a means for abruptly terminating the ejection of the material.

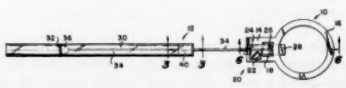
3,828,987

DISPENSING MICROPIPETTE APPARATUS HAVING DISPOSABLE PARTS FOR DELIVERING A PRESELECTED QUANTITY OF FLUID

Michael E. Drummond, West Chester, and John E. Robinson, Springfield, both of Pa., assignors to Drummond Instrument Company, Broomall, Pa.

Continuation-in-part of Ser. No. 75,203, Sept. 24, 1970. This application June 2, 1972, Ser. No. 259,177

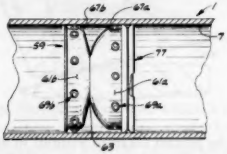
Int. Cl. G01f *11/00*

U.S. Cl. 222—386 **6 Claims**

This invention is a dispensing micropipette apparatus having disposable parts for delivering a preselected quantity of fluid. The apparatus includes a capillary tube through which a wire plunger extends, the wire plunger being secured at one end to a holder. One end of the capillary tube is reduced in diameter to provide an end wall portion serving as a stop engaged by a stop member mounted on the wire plunger at a predetermined distance from the lower end of the plunger. The engagement of the stop member with the stop means positively and automatically controls the amount of fluid drawn into the capillary tube without visual determination of the amount drawn therein.

3,828,988
TANK FOR BULK TRANSPORT AND STORAGE OF SEMISOLID MATERIALS

George R. Berry, Wood River, Ill., assignor to Bervy Inc., Bethalto, Ill.

Filed Apr. 4, 1973, Ser. No. 347,845
Int. Cl. B67d 5/06
U.S. Cl. 222—389 18 Claims

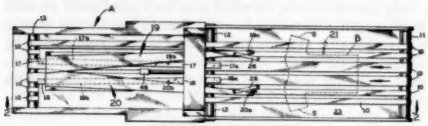


A tank for the transport or storage in bulk of semisolid materials, such as lubricating grease, lard, butter or the like, the tank having an outlet at one end thereof, and a piston movable longitudinally within the tank from one end thereof to the other. The piston is forced toward the outlet by compressed air introduced into the tank behind the piston for pressurizing the semisolid material and forcing it toward the outlet. Flexible seals extending beyond the periphery of the piston scrape the semisolid material from the inner tank surface and seal the piston relative to the tank. Two circumferential rows of ball rollers extend around the periphery of the piston and are spaced longitudinally from one another on the piston. The balls are resiliently mounted on the piston so as to prevent canting of the piston in the tank, to hold the balls in engagement with the internal surface of the tank, and to accommodate changes in the internal cross-section of the tank within a limited range as the piston moves longitudinally within the tank.

3,828,989
TEXTILE FOLDING APPARATUS

Charles P. Heater, Boca Raton, Fla., assignor to Jensen Corporation, Fort Lauderdale, Fla.

Filed Oct. 18, 1973, Ser. No. 407,640
Int. Cl. A41h 33/00
U.S. Cl. 223—37 13 Claims

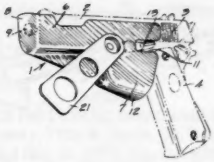


An apparatus for folding a T-shirt or other textile article as it is advanced by a conveyor. The middle of the article passes under guide plates that closely overlie the conveyor. The article is folded in from opposite sides over the top of these guide plates by overlying folding plates with inner folding edges that converge toward one another. The opposite side extremities of the article where it is the widest (such as the sleeves of a T-shirt) slide over the top of the folding plates and they are folded out over the top of the in-folded side portions of the article.

3,828,990
HOLSTER FOR PISTOLS

Archie Baldocchi, Edicficio Rivas Cievia 707 Calle Arce, San Salvador, El Salvador

Filed Dec. 27, 1972, Ser. No. 319,021
Int. Cl. F41c 33/02
U.S. Cl. 224—2 C 3 Claims

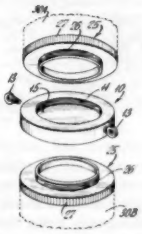


The holster is formed of a channel member shaped to conform to the shape of a pistol from the muzzle of the barrel to the handle. The channel member is of generally U-shaped cross-section of variable dimensions so that the pistol nests therein. The end of the channel member holding the barrel is closed, and a conical inward projection on said closed end fits into the muzzle of the barrel. A cam lock at the tip of the slide stop of the pistol holds the pistol against sliding toward the open end of the channel member. A release finger on the exterior of the channel member is adapted to be manually turned so as to move the cam lock out of the way of the tip of the slide stop. The slide stop itself is held in a slot in the open end of the holster so as to hold the pistol in the channel chamber. An adjustable support member is pivoted on the body side of the channel member and means are provided to adjust the support member to a proper attitude for supporting the holster in suitable position for quick drawing of the pistol.

3,828,991
CARRIER FOR INTERCHANGEABLE CAMERA LENSES

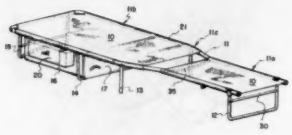
MacDonald S. Moore, 77 Fulton St., New York, N.Y. 10038

Filed Feb. 9, 1973, Ser. No. 330,927
Int. Cl. A45f 5/00
U.S. Cl. 224—5 V 7 Claims



The carrier is for use with lenses, for still cameras, of the type having mounting ends releasably securable in a lens mount on the camera. The carrier is an annular member formed with a pair of coaxial and axially spaced threaded recesses extending in opposite directions from a central diametric plane, and respective lens mounts are threadedly engaged in each recess for securement of a respective interchangeable camera lens therein. The lens mount may be threaded for threaded engagement with a lens or may have a bayonet-type joint for engagement with a corresponding bayonet-type joint on the lens. The annular member has an imperforate diaphragm or partition extending thereacross at its central plane providing dust-proof mounting for the lens mounts. A pair of apertured lugs are threaded into the annular member at diametrically opposite points to receive snap hooks on the ends of a neck strap for supporting the carrier.

3,828,992
FOLDING COT PACK
Joseph D. Cerchione, 365 Cypress Dr., Idaho Falls, Idaho 83491
Filed Aug. 7, 1972, Ser. No. 278,221
Int. Cl. A45f 4/00
U.S. Cl. 224—9 11 Claims



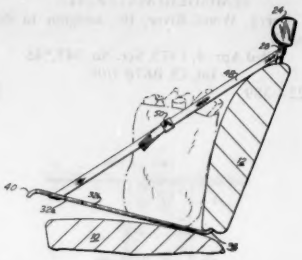
A combination sleeping cot and back-pack includes sheet material and supporting means attached to a frame, which is foldable from an elongate, sleeping cot condition to a relatively short and compact condition as a back-pack, and vice versa. The frame has a relatively narrow terminal portion adapted to fit against the back of a person carrying the back-pack and to support the lower limbs of a person using the cot, and has an opposite, relatively wide, terminal portion as an outer wall part of the back-pack and for supporting the trunk, upper limbs, and head of a person using the cot. Straps are secured to the frame so as to fit over the shoulders of a person carrying the back-pack. The sheet material attached to the frame preferably forms a pack bag under one of the terminal portions of such frame, usually the wide portion, so as to be inside the back-pack and under the cot to facilitate the loading and carrying of items and to make it unnecessary to unpack when using the cot.

3,828,993
BICYCLE TRANSPORTING RACK
John S. Carter, 979 Debra Dr., Santa Barbara, Calif. 93110
Filed Jan. 20, 1972, Ser. No. 219,440
Int. Cl. B60m 9/10
U.S. Cl. 224—42.1 F 2 Claims

An automotive bicycle rack in the form of a car top adjunct and by means of which one or more bicycles may be fixedly supported in an upright condition above the car roof. A novel supporting bracket releasably holds the front wheel steering fork of each bicycle frame securely in position and application of such steering fork to the bracket, and removal therefrom is easily effected without requiring the use of tools.

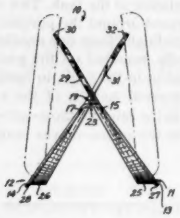
3,828,994
APPARATUS FOR TRANSPORTING ARTICLES IN THE SPACE ABOVE THE OUTBOARD PASSENGER PORTION OF THE FRONT SEAT OF A MOTOR VEHICLE
Jesse R. Hollins, 40 Stoner Ave., New York, N.Y. 11021
Filed Aug. 7, 1973, Ser. No. 386,376
Int. Cl. B60r 27/00
U.S. Cl. 224—42.46 B 8 Claims

A platform includes a rear portion which extends slightly into the crevice between the front seat and the front seat back at the outboard passenger portion of the front seat and front seat back. A strap is provided and is looped about the passenger head restraint and maintains all but the rear portion of the platform above the front seat so that articles such as



packages can be placed thereon without in any way affecting the motor vehicle ignition starter interlock system and seat belt warning system.

3,828,995
MUFFIN SEPARATOR
Joseph E. Shorin, New York, N.Y., and Vero Ricci, Collingswood, N.J., assignors to Aggogle Inc., New York, N.Y.
Filed May 21, 1973, Ser. No. 362,551
Int. Cl. B26f 3/02
U.S. Cl. 225—94 7 Claims

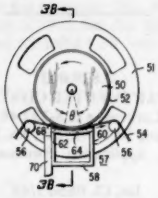


The present invention is directed to a muffin separator for breaking English muffins or like bakery products into halves, the device incorporating a pair of generally U-shaped open frame members hingedly connected together about a common pivot axis, each said frame member including a series of tines which extend in a direction generally perpendicular to the pivot axis. The device is used by impaling the muffin on the tines when the same are aligned in parallel and thereafter spreading the halves, the device being characterized in that the tines extend across the pivot axis for a substantial portion of their length, whereby when the frames are shifted from a closed or parallel tine position toward an open position, the tines are shifted to an X configuration, resulting in an improved breaking action on the muffin, as contrasted with separators heretofore known.

3,828,996
RECORD WEB CONTROL AND DRIVE APPARATUS
Henry Ray Warren, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 200,011, Nov. 18, 1971. This application June 13, 1973, Ser. No. 369,736
Claims priority, application Great Britain, Apr. 5, 1971, 8684/71
Int. Cl. B65h 17/20
U.S. Cl. 226—168 9 Claims

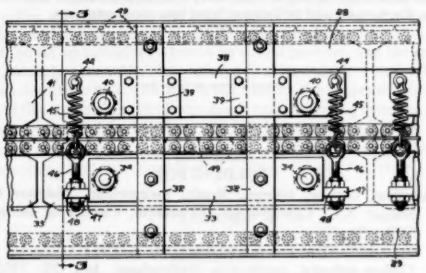
A means for effecting improved web advancing cooperation between a capstan and a recording web is disclosed. The peripheral surface of a rotating capstan which is to contact

one side of a web is covered with a high coefficient of friction material. A member at the opposite side of the web, having a



low coefficient of friction surface and which is stationary with respect to the direction of web motion, urges the web into motion imparting engagement with the capstan surface.

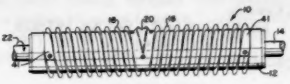
3,828,997
APPARATUS FOR POSITIVELY CONVEYING SHEET MATERIALS
Gerald A. Snow, Cumberland, Maine, assignor to United Industrial Syndicate, Inc., Portland, Maine
Filed May 30, 1973, Ser. No. 365,224
Int. Cl. B65h *17/34*
U.S. Cl. 226—172 **4 Claims**



Apparatus for conveying sheet materials that must be securely held by its margins to ensure its positive advance, through a thermoformer for one example has supporting and hold down conveyors. Each conveyor consists of transversely spaced chains of the roller type trained about sprockets and means are provided maintaining their proximate courses in gripping relation with the margins of the conveyed material. The chains of one conveyor have teeth disposed and dimensioned to pierce the material without interference from the chains of the other conveyor and to extend in back of appropriate ones of their links. The sprockets of the two conveyors are arranged so that the material is engaged by the conveyor whose chains have the teeth before and remains in engagement therewith after the material is also in engagement with the other conveyor.

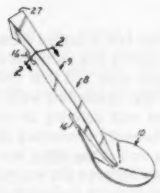
3,828,998
SCROLL ROLL
Frank R. Gross, 3926 Woodthrush Rd., Akron, Ohio 44313
Filed Feb. 20, 1973, Ser. No. 333,683
Int. Cl. B65h *17/20*
U.S. Cl. 226—192 **6 Claims**

This invention relates to a scroll roll having several unique applications. Fundamentally, the invention consists of a cylindrical body member upon which is mounted spiral blade members longitudinally diverging about the circumference of the



cylinder. The blades are removably mounted to the cylindrical body member by engagement between blade supporting flanges secured to the cylindrical member.

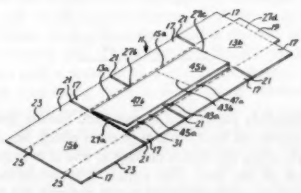
3,828,999
PACKAGE INCLUDING DISPOSABLE UTENSIL
Dallas R. Humphrey, 2780 N. 2nd St., St. Paul, Minn. 155109
Filed Oct. 24, 1972, Ser. No. 300,201
Int. Cl. B65d *77/30;* **A47j** *43/28*
U.S. Cl. 229—1.5 C **9 Claims**



An eating utensil adapted to be conveniently packaged with vendable foods and easily formed to a shape for aiding the consumption of the packaged food product. The utensil is a thin blank having a rectangular portion and a rounded end portion. The rectangular portion is formed with fold lines dividing it into three long narrow areas. The portion is folded along the fold lines to form the handle and snap fasteners formed on opposite edges of the rectangular portion interlock to hold the areas in the folded position and the handle has a triangular cross section. The fold lines are extended into the end portion causing it to form a bowl as the handle is formed.

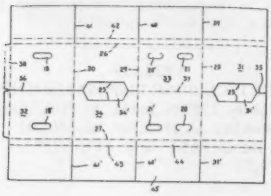
The utensil is easily packaged between sealed strips of sheet material and may be placed on a can or carton beneath the product label or the package may form part of the product label.

3,829,000
METHOD FOR FORMING A REINFORCED FIBERBOARD CONTAINER
Donald E. Ellison, Clayton, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.
Filed Aug. 28, 1972, Ser. No. 283,952
Int. Cl. B65d *25/14*
U.S. Cl. 229—14 BA **10 Claims**



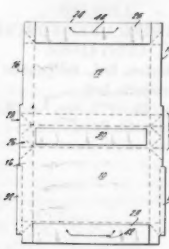
A reinforcing liner of improved design is quickly and easily attached to the outer box blank as a part of the formation of the fiberboard container.

3,829,001
COMPARTMENTED BOX
Leonard Arthur Wheeler, P.O. Box 404 Sta. K., Toronto 315, Ontario, Canada
Filed Nov. 9, 1971, Ser. No. 197,029
Int. Cl. B65d 3/24, 5/48
U.S. Cl. 229—15 5 Claims



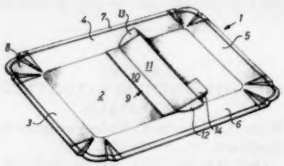
A compartmented box is folded from a one-piece blank to provide a pair of similar box sections, each box section comprising a rectangular base and four upstanding walls integral with the base, the four upstanding walls of each box section including a first end wall defining an end wall of the box, a second end wall hingedly connected along its upper edge to the corresponding wall of the other box section, and a pair of side walls extending between the end walls, said hingedly connected walls being secured in face to face relation and constituting a double-thickness partition defining a pair of adjacent box compartments.

3,829,002
ONE PIECE COLLAPSIBLE PAPER BOX
Samuel Kleinhaut, Forest Hills, N.Y., assignor to Bagprint Ltd., Long Island City, N.Y.
Filed July 7, 1972, Ser. No. 269,546
Int. Cl. B65d 5/36, 33/02, 33/06
U.S. Cl. 229—16 A 6 Claims



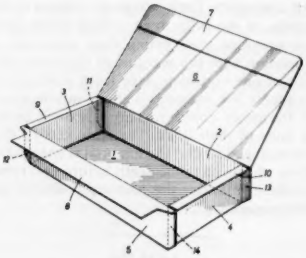
A collapsible paper box is provided having front and rear panels connected by a bottom portion which lies along one of the panels when the box is collapsed and is movable to permit expansion of the box. The panels are connected along opposite sides by collapsible elements running the length of the box, said elements having a slot along one end thereof. The elements are provided with folds adjacent the slot to permit the upper portion of the front and rear panels to be folded one on the other to close the box. In addition, means for strengthening the side elements of the box are provided, said means adopted to move into operative position only after the box is expanded.

3,829,003
COMPARTMENTED CONTAINER
Rolf Magnus Dilot, Larkvagen 6, S-222 48 Lund, Sweden
Filed June 14, 1972, Ser. No. 262,810
Claims priority, application Sweden, June 18, 1972, 7965/71
Int. Cl. B65d 5/48
U.S. Cl. 229—31 R 10 Claims



A container is provided for ready-cooked or partially cooked food, having at least one removable partition attached to the bottom and defining at least two compartments.

3,829,004
FOLDING BOX
Adelbert Graser, Spiegel, Koniz, Switzerland, assignor to Steiger A.G. Lithographie, Druckerei, Canton of Berne, Switzerland
Filed Jan. 4, 1973, Ser. No. 320,993
Claims priority, application Switzerland, Jan. 20, 1972, 857/72
Int. Cl. B65d 5/22
U.S. Cl. 229—33 1 Claim



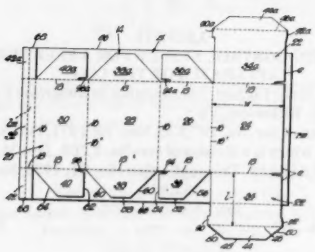
A folding box is set up from a blank coated on one side with a thermoplastic material, having a rear wall with an articulated lid and closure flap, two side walls, and a front wall, the side and upper edges of the side walls and the upper edge of the front wall being bent outwardly to form closure borders.

3,829,005

FOLDING CONTAINER WITH FOLDING CLOSURE ENDS

Robert A. Hackenberg, East Lyme; Walter J. Tyrseck, Quaker Hill, and Chapman Berry, Old Lyme, all of Conn., assignors to Robertson Paper Box Company, Inc., Montvile, N.J.

Filed July 3, 1972, Ser. No. 268,829
Int. Cl. B65d 5/10, 5/62
U.S. Cl. 229—39 R 11 Claims



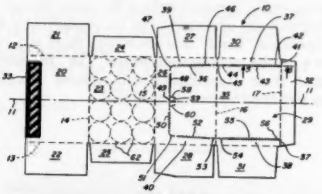
A four-sided folding container rectangular in section when set-up, and having four folding closure end flaps at each end, with each container end being closed by infolding a designated first end flap thereat into closed position, then infolding the two end flaps next adjacent to the first end flap, and finally infolding the remaining end flap, and each of these first end flaps is dimensioned substantially to fit the adjacent open end of the set-up container when in its closed position, and has opposite side ears, while the container is at its ends provided with slits into interlock-with which the ears on the respective first end flaps snap when the latter reach correct closing position in the course of their infolding. Each first flap may also be provided with a folding end tongue which an inward folding of the remaining associated end flaps is tucked between the latter.

3,829,006

SHIPPING AND DISPLAY CARTON AND BLANK THEREFOR

Richard G. Spiegel, 4925 W. Coventry, Hopkins, Minn.

Filed Feb. 1, 1973, Ser. No. 328,840
Int. Cl. B65d 5/54
U.S. Cl. 229—51 TS 12 Claims



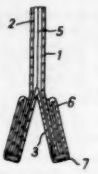
An improved folding paper-board carton formed of a unitary blank having longitudinal and transverse fold facilitating score lines whereby the blank is adapted to be formed into a carton, said blank including longitudinal and transverse tear facilitating score lines for the removal of a tear panel whereby the carton is readily convertible from a sturdy shipping container to a display and dispensing enclosure of increased efficiency and attractiveness.

3,829,007

PLASTICS-FILM BAGS

Anthony Alexander Ellison, Stotfold, near Hitchin, England, assignor to British Visqueen Limited, London, England

Filed Apr. 28, 1972, Ser. No. 248,488
Claims priority, application Great Britain, Apr. 30, 1971, 12341/71
Int. Cl. B65d 33/02
U.S. Cl. 229—55 9 Claims



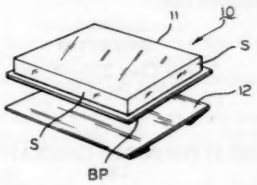
Carrier or other bag of plastics, e.g. high density polyethylene, bottom-gusseted and block-ended, in which strips, preferably of the same plastics, are sealed along the base in specified manner, rendering the opened bag substantially free-standing.

3,829,008

COMBINATION GIFT WRAP AND RECEPTACLE

Lowell C. Murray, and John G. Ruble, both of Fort Wayne, Ind., assignors to Container Corporation of America, Chicago, Ill.

Continuation-in-part of Ser. No. 173,153, Aug. 19, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,519
Int. Cl. B65d 65/06, 65/28
U.S. Cl. 229—87 R 7 Claims



Soft goods are shipped in a conventional container having a decorative gift wrap secured thereto. The gift wrap is in the form of a folder having an exposed plain obverse side and a decorative reverse side. The folder is formed from a cut and scored sheet and is secured to a receptacle bottom, and includes flaps extending from a main panel thereof having dimensions corresponding to the dimensions of a panel of the receptacle. The main panel may be detachably secured to the receptacle. The flaps are folded upon themselves, and the two outermost flaps are secured to hold all the flaps in place. A tear strip is provided in the overlapping one of such secured flaps, and upon removal of such strip, the flaps are opened and reversed about the receptacle as a decorative wrap. A seal may be tipped on one of the flaps and can be transferred upon completion of the decorative wrap about the receptacle to seal the same.

3,829,009

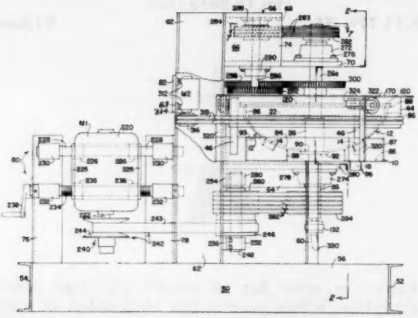
SOLID BOWL CENTRIFUGAL SEPARATOR

William H. Peck, 2508 Omaha, Pittsburg, Kans. 66762, and Samuel A. Collier, 70290 E. Avenue, Tulsa, Okla. 74112

Filed Mar. 15, 1973, Ser. No. 341,527

Int. Cl. B04b *1/00*

U.S. Cl. 233—7 **43 Claims**



A centrifugal separator for the removal of solids from slurry. A high-speed bowl which rotates about a vertical axis is centrally fed with slurry in its upper region. A circular ceiling plate above the level of slurry feed establishes with the cylindrical upper rim section of the bowl a narrow annulus which becomes sealed with sludge as the solid constituents build up in the vicinity thereof and a series of plows advance slowly around the annulus and through the sludge seal and serve to elevate the sludge above the ceiling plate and into the path of a series of rotatable buckets. The latter orbit at a slightly increased speed around the bowl interior and in connection with rotation thereof assume outside ecliptic positions where they scoop wads of sludge from the sludge seal. Such buckets also in connection with rotation thereof assume inside ecliptic positions where their directional relationship is reversed so that centrifugal force dislodges the wads and causes them to be flung radially outwards over the rim of the bowl. The liquid constituent of the slurry is forced outwardly through an outlet in the bowl bottom wall.

ERRATUM

For Class 235—06 see:
Patent No. 3,828,465

3,829,010

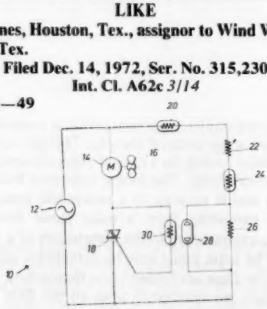
THERMOSTAT FOR POWER VENTILATORS AND THE LIKE

James D. Jones, Houston, Tex., assignor to Wind Wonder, Inc., Houston, Tex.

Filed Dec. 14, 1972, Ser. No. 315,230

Int. Cl. A62c *3/14*

U.S. Cl. 236—49 **13 Claims**



A thermostat for use with a power ventilator which responds to attic or inside temperatures to actuate a motor turning a power ventilator, said thermostat incorporating a first means which is responsive to ambient temperature of the air causing the apparatus to turn on and a second means responsive to temperature of the ambient air in case of fire or overheating which turns the apparatus off. The circuitry connects directly with conventional AC power lines and includes a pair of separate isolated circuit legs, one of which is temperature responsive in the manner described above so that signals are formed therein and the other leg of the circuit including switching means, switching the current off and on for a motor for such a power ventilator.

3,829,011

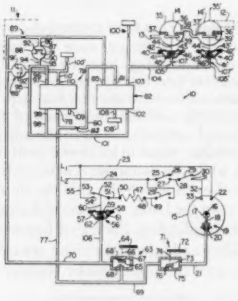
PNEUMATIC CONTROL SYSTEM FOR A FUEL BURNING APPARATUS OR THE LIKE

Douglas R. Scott, Elkhart, Ind., assignor to Robertson Controls Company, Richmond, Va.

Division of Ser. No. 197,538, Nov. 10, 1971, Pat. No. 3,754,572, which is a division of Ser. No. 5,709, Jan. 26, 1970, Pat. No. 3,635,645. This application May 21, 1973, Ser. No. 362,092

Int. Cl. G05b *11/58*

U.S. Cl. 236—82 **1 Claim**



This disclosure relates to a pneumatic control system for a clothes dryer wherein the flow of fuel to the main burner means is pneumatically controlled in such a manner that the ignition means for the main burner means must be first pneumatically actuated before the pneumatic control system will pneumatically open the fuel supply means to the main burner means, the control system including a pneumatically operated logic "memory" unit to assure that the ignition means is always pneumatically operated before the main burner means can be pneumatically operated to its on condition by a pneumatically operated "nand" unit each time there is a requirement to turn on the main burner means. The "memory" unit is prevented from transmitting atmosphere therethrough when being switched by its setting signal.

3,829,012

PRESSURE MAINTAINING FOR A LIQUID HEATING PLANT

Gunnar Brejner, Ryney 16, D.K. 2830, Virum, Denmark

Filed Sept. 14, 1972, Ser. No. 289,102

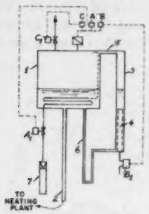
Claims priority, application Denmark, Sept. 17, 1973, 4562/73

Int. Cl. F24c *3/06*

U.S. Cl. 237—8 R **7 Claims**

A central heating plant of the closed system type contains a pressure expansion tank connected to a source of pressurized

nitrogen and a steam generator, automatics is provided which, by falling water level in the expansion tank, primarily feeds



steam of the same pressure as the pressure prevailing in the tank and secondarily feeds nitrogen to the tank, in order to maintain the working pressure of the plant.

3,829,013

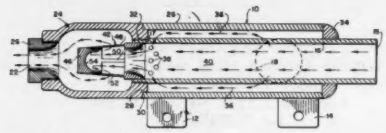
SNOW MAKING APPARATUS

H. Ronald Ratnik, 474 Thurston Rd., Rochester, N.Y. 14619

Filed Nov. 3, 1971, Ser. No. 195,142

Int. Cl. F25c *3/04*

U.S. Cl. 239—14 **1 Claim**



Improved apparatus for making artificial snow by simultaneously releasing a mixture of water and air under pressure through a discharge aperture into the atmosphere. Prior to discharge, the water and air mixture is forced to impinge against the concave surface of a blocking member mounted inwardly of the discharge aperture in the path of the exiting mixture. The blocking member serves to increase atomization of the water and air mixture and reduces the quantity of compressed air required to effect coverage of a given area with the artificially produced snow. In addition, the blocking member serves to significantly reduce the operating noise level of the improved snow making apparatus.

3,829,014

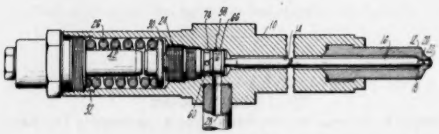
FUEL INJECTOR HAVING SELF-CLEANING FILTER

Charles W. Davis, Simsbury, and Vernon D. Roosa, West Hartford, both of Conn., assignors to Stanadyne, Inc., Hartford, Conn., by said Davis

Filed Nov. 29, 1972, Ser. No. 310,269

Int. Cl. F02m *55/00*

U.S. Cl. 239—86 **2 Claims**



A precision fuel injector having an inwardly opening pressure operated valve positioned in a bore forming a valve chamber and guided for reciprocal movement to open and close the valve wherein the valve guide at the end of the valve chamber opposite the valve tip is provided with a sleeve extending into the valve chamber to provide an integral filter. The sleeve is interposed between the fuel inlet and the valve chamber and provides communication therebetween through a pair of annular clearances having a width which is one-half or less of the diameter of the discharge orifices of the injector to trap solid particles and prevent the blockage thereof. The filter construction retains the trapped particles in the flow path where the velocity of fuel flow is maximum to subject them to the repetitive high pressure hydraulic forces as sequential measured charges of fuel are delivered to the injector to hammer them against the hardened metal edge of the filter and pulverize them to render the filter self-cleaning.

3,829,015

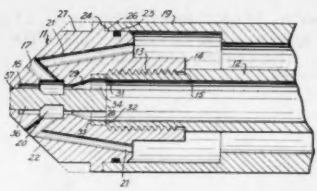
ACOUSTIC NOZZLE

Richard J. Monro, Bronxville, N.Y., assignor to Combustion Equipment Associates, Inc., New York, N.Y.

Filed June 22, 1972, Ser. No. 265,399

Int. Cl. B05b *17/06*

U.S. Cl. 239—102 **9 Claims**



A nozzle for finely dispersing a liquid in a gas stream, usually air or steam, has therein a reverberation chamber for producing acoustic energy in the gas stream. The gas then flows through a plurality of tubular passages which are intersected by tubular passages carrying therethrough a liquid to be nebulized, said liquid usually being oil. The nozzle is particularly useful for nebulizing oil in preparation for combustion thereof.

3,829,016

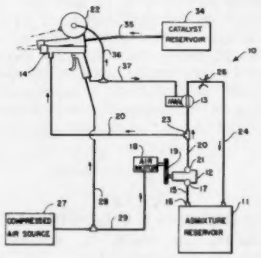
APPARATUS FOR SPRAYING RESIN AND EXPANDED THERMOPLASTIC SPHERES

James A. Scharfenberger, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Continuation of Ser. No. 88,579, Nov. 12, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,796

Int. Cl. B05b *9/00*

U.S. Cl. 239—127 **3 Claims**



A system for and a method of dispensing an admixture including a thermosetting or thermoplastic resin and expanded thermoplastic spheres. The system includes a reservoir for the

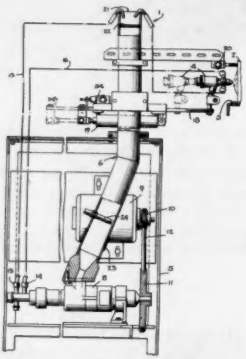
admixture. A pump, such as a rotary pump, has its inlet connected to the reservoir and is adapted to withdraw the admixture from the reservoir. The length of time that the admixture is subjected to such pressure of the pump is insufficient to either cause harmful rupturing of the expanded spheres or to cause generation of heat of sufficient magnitude to cause harmful curing of the resin. A dispensing apparatus is connected to the outlet of the pump and is adapted to spray the admixture when activated. A valve may be connected between the outlet of the pump and the reservoir. The valve is adapted to terminate the flow of the admixture to the dispensing apparatus upon de-activation of the dispensing apparatus and to return the admixture withdrawn from the reservoir by the pump to the reservoir. The system may include a pressure balancing device to regulate the pressure of the system so that the system experiences little, if any, pressure differences when the system is cycled.

3,829,017

AUTOMATIC FLUX SPRAY DISPENSER

Carl A. Napor, Glenridge, and Charles G. Krumm, Wyckoff, both of N.J., assignors to Kahle Engineering Co., Union City, N.J.

Division of Ser. No. 151,360, June 9, 1971, Pat. No. 3,741,150.
This application June 1, 1973, Ser. No. 366,035
Int. Cl. B05b *1/24*; **B44d** *3/42*
U.S. Cl. 239—135 **3 Claims**



An improved automatic fluxing system is disclosed for applying flux to articles on a production line basis. The system includes an automatic spray gun with a movable mounting for directing the flux onto articles being presented to the spray gun by a conveyor. The system includes automatic nozzle controls and a flux supply system for the nozzle, particularly adapted for handling corrosive, abrasive and highly viscous fluxes. The flux supply system includes a special pump for continuously circulating flux in the reservoir in addition to continuously supply flux to the nozzle. The circulating reservoir eliminates the need for flux agitators and also permits the flux to be heated and maintained at a uniform pre-set temperature making the flux supply independent of pump induced temperature variations and of temperature related viscosity changes.

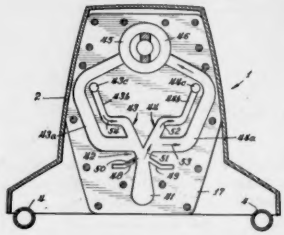
3,829,018

OSCILLATING WATER SPRINKLER

Edwin L. Oberto, Libertyville, Ill., assignor to Burgess Vibrocrafters, Inc., Grayslake, Ill.

Filed Oct. 15, 1973, Ser. No. 406,323
Int. Cl. B05b *3/16*
U.S. Cl. 239—242 **4 Claims**

The sprinkler manifold tube is driven in oscillation about its axis by a fluidic-mechanical system. In both embodiments described, a single fluidic bi-stable interchange controls the incoming flow. The stream, flowing alternately to one side and the other from the interchange, divides into two branches, one branch flowing to one side of a motor chamber to drive the paddle-piston therein and thus the sprinkler tube which is supplied by the other branch. In one embodiment, a mechan-



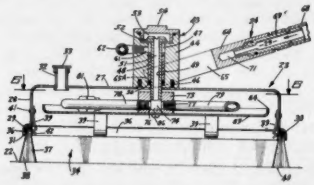
ical valve actuated at the adjustably predetermined end of each sprinkler tube sweep switches the stream to its alternate channel system while in another embodiment this flow switching operation is accomplished by an impulse generated in the motor chamber when the paddle-piston reaches the end of its travel.

3,829,019

SPINNER ASSEMBLY

Harold A. Petsch, Excelsior, Minn., assignor to Chaska Chemical Company, Inc., Savage, Mich.

Filed Feb. 2, 1972, Ser. No. 222,836
Int. Cl. B05b *3/06*
U.S. Cl. 239—251 **20 Claims**



A cleaning apparatus having a pan-shaped housing carrying burshes engageable with a surface to be cleaned. Mounted on the top of the housing is a spinner assembly having a body containing a longitudinal passage. A tubular shaft rotatably mounted in the passage carries tubular arms located within the housing. The fluid flows from the hollow shaft into the arms and is discharged through the slots in the nozzles. Nozzles having slit orifices are mounted on the ends of the arms. The shaft has a head located in a chamber at one end of the passage. The diameter of the head is larger than the diameter of the passage and is dynamically balanced by the flow of fluid under pressure through the passage and chamber into the hollow shaft.

3,829,020

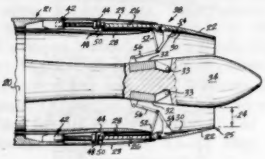
TRANSLATING SLEEVE VARIABLE AREA NOZZLE AND THRUST REVERSER

Gabriel E. Stearns, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed June 13, 1973, Ser. No. 369,697
Int. Cl. B64d *33/06*
U.S. Cl. 239—265.13 **6 Claims**

A variable area discharge nozzle and thrust reversing mechanism for a jet engine wherein an annular exhaust nozzle

having a telescopic sleeve, forms the aft section of the exhaust nozzle duct and a fixed plug centerbody is mounted within the duct. For the low speed takeoff and landing mode of airplane operation, the aft section of the exhaust duct is translated rearward thereby withdrawing in combination, a telescopic sleeve section having cascade vanes and an internal cover for the cascade vanes. With the cascade vanes and cover in the aft position, the overall length of the exhaust duct is extended and through the contoured centerbody and inner duct wall, the exhaust nozzle exit area is increased. Also, in this position the



cascades are exposed externally and the thrust reversing mechanism is in the armed position, To reverse the thrust the cover under the cascade vanes is slid forward to expose them and through an interconnecting linkage mechanism, a blocker door downstream of the cascade vanes, blocks the rearward flow of the exhaust fluid and causes it to exhaust through the cascade vanes. As an additional embodiment, for sound suppression, a plurality of acoustically treated struts are hinged to and retract into the centerbody for stowage, and are radially extended into the exhaust duct flow for the sound suppression mode.

3,829,021

JET DEFLECTOR FOR V/STOL-AIRCRAFT

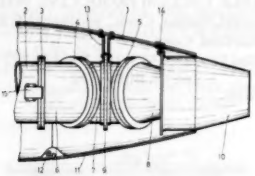
Gerhard Kopp, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Mar. 12, 1973, Ser. No. 340,227

Claims priority, application Germany, Mar. 16, 1972, 2212649

Int. Cl. B64c *15/04*

U.S. Cl. 239—265.35 **10 Claims**



Improvement in construction for a jet deflector for V/STOL-aircraft. In such aircraft having a curved exhaust gas duct which is rotatable for controlling the magnitude and direction of jet deflection, and wherein there is provided bearings between relatively rotatable portions of said ducts, there is provided locking means by which said duct is locked to and supported by the frame of the aircraft under certain desired conditions. Thus, when the aircraft is in normal cruising flight, the otherwise rotatable duct may be rigidly locked to the frame of the aircraft and thereby be supported on and by said frame to relieve said bearings from a substantial portion of the load otherwise imposed thereon. This minimizes wear on said bearings and contributes to a longer life for same. The locking and unlocking device may be either under the direct control of the pilot or may be automatically responsive to the position of the jet deflector mechanism.

3,829,022

AERATING DEVICE FOR PULVERULENT MATERIAL

Robert C. Reiter, Aurora, Ill., assignor to Material Control, Inc., Aurora, Ill.

Filed Apr. 4, 1973, Ser. No. 347,853

Int. Cl. B05b *1/00*

U.S. Cl. 239—288.5 **2 Claims**

As installed in multiple on downwardly convergent side wall portions of a pulverulent material storage or delivery bin, the device is an assembly, in a generally oblong shape and relatively shallow front-to-rear depth, of a stamped sheet metal body plate, a steel mesh and fabric laminate affording a diffusion screen of relatively flat, truncated pyramidal cross section, and a nipple unit providing an air discharge orifice centered in relation to the body plate, said unit extending through an aperture in the plate and communicating the aerator with a source of low pressure air. The nipple orifice is forwardly bridged within the screen component by a steel stamping which is spaced somewhat rearwardly of the latter and forwardly of the air orifice; and this part acts solely as an air flow deflector and diffuser baffle directly forward of the orifice sub-assembly. Deformation and damage to said screen and sub-assembly are positively prevented by a pair of like protective steel stiffener stampings of open frame-type outline, which parts are welded to the body plate at zones equally spaced on opposite sides of the orifice unit and come forward into bracing engagement with the screen as they transversely span substantial areas of the latter at said zones.

3,829,023

ATOMIZING DEVICE

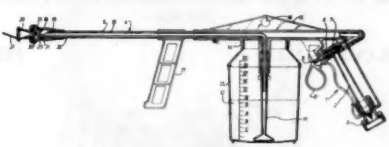
Rene Bouillard, and Henry Bouillard, both of 71370 Saint-Germain du Plain, France

Filed Jan. 23, 1973, Ser. No. 326,016

Claims priority, application France, Mar. 28, 1972, 72.10901

Int. Cl. B05b *7/30*

U.S. Cl. 239—318 **7 Claims**



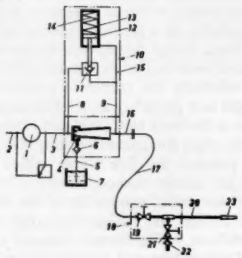
An atomizing device in the form of a gun provided with a barrel constituted of two coaxial tubes, the outer tube of which communicates with a pipe for delivering water under pressure and the inner tube of which communicates with a tank containing the concentrated liquid product to be atomized and which is fixed to the gun. A venturi member in the form of a bobbin is mounted at the outlet end of the outer tube and it comprises two spaced annular flanges whose diameters are substantially equal to the inside diameter of the outer tube of the barrel, and an intermediate hollow part of

reduced diameter. The venturi member has a first hole passing axially through the center of the upstream flange into an inner chamber of the intermediate hollow part, a second hole passing axially through the center of the downstream flange and into the inner chamber, and a third hole passing radially through the wall of the intermediate hollow part. A tubular coupling is formed integrally with the upstream flange and eccentrically in relation to the axis of the venturi and its inner bore opens into the annular space between the flanges, the tubular coupling being connected in fluid-tight manner to the end of the inner tube of the barrel.

3,829,024
WASHING AND HIGH PRESSURE JET CLEANING APPARATUS

Olle Heden, Alingsas, Sweden, assignor to Euroclean AB, Alingsas, Amal, Sweden

Filed Sept. 4, 1973, Ser. No. 393,782
Claims priority, application Sweden, Sept. 8, 1972, 11574/72
Int. Cl. B05b 7/26
U.S. Cl. 239—310 **4 Claims**

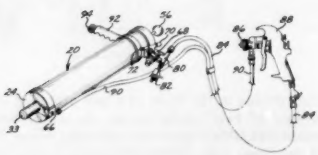


In a washing apparatus for alternately effecting washing at low pressure and high pressure jet cleaning and having a jet nozzle and an injector for supply of a washing agent to the washing fluid during the washing periods, a first conduit bypassing the injector and provided with means adapted to control the passage through said by-pass conduit in response to variations in the pressure downstream of said injector. Said downstream pressure being variable by means of manually operable valve means fitted close by the jet nozzle of the apparatus.

3,829,025
QUICK LOAD PRESSURE POT

Harold D. McLeod, 11167 Ryerson, Downey, Calif. 90240

Continuation-in-part of Ser. No. 238,595, March 27, 1972, Pat. No. 3,733,032. This application May 11, 1973, Ser. No. 359,506
Int. Cl. B05b 9/00
U.S. Cl. 239—373 **3 Claims**

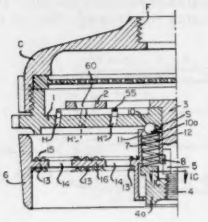


A pressurized cylinder for receiving liquids to be sprayed from connected equipment. The cylinder includes a movable piston that facilitates quick loading and cleaning as it is adjusted to predetermined positions.

3,829,026
SPRAY PRODUCING DEVICE

Elie P. Aghnides, 795 Fifth Ave., New York, N.Y. 10021

Filed Mar. 26, 1973, Ser. No. 344,654
Int. Cl. B05b 1/16
U.S. Cl. 239—394 **19 Claims**



This disclosure relates to a spray producing device having an upstream disc for producing high velocity jets of liquid, and a downstream disc that includes mixing means in the form of screens, but also including certain open areas in place of some of the screens.

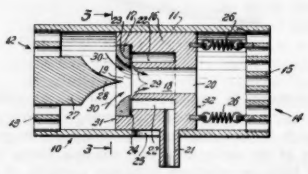
The downstream disc is rotatable to enable the user to select between one arrangement, wherein the jets are aerated, and another arrangement, wherein the jets are sharp, needle-like streamlets.

A lost-motion connection is arranged between said upstream and downstream discs so that when the downstream disc is rotated in one direction, the relation between the two discs is such as to result in said first arrangement, providing aeration of the jets, and when the downstream disc is rotated in the opposite direction, the relation of the discs is such as to result in said second arrangement, providing sharp, needle-like streamlets.

3,829,027
VARIABLE VACUUM PRODUCING NOZZLE

Zenon R. Mocarski, Easton, Conn., assignor to S.R.C. Laboratories Inc., Fairfield, Conn.

Filed Feb. 28, 1973, Ser. No. 336,723
Int. Cl. B05b 7/12
U.S. Cl. 239—410 **12 Claims**



A nozzle having a through passageway with an intermediate slot connected to a source of pressurized fluid with the flow of pressurized fluid inducing flow of ambient fluid into the entrance and through the passageway and in which the area of the entrance to the passageway through which the ambient fluid may flow is decreased to increase the extent of the vacuum produced by the nozzle to thereby provide a lower absolute pressure at the entrance.

3,829,028

METHOD FOR THE ACTIVATION OF LOOSE INGREDIENTS OF ELASTOMER MIXES

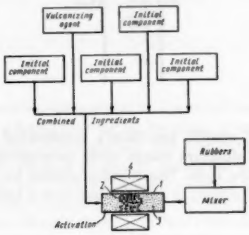
Fedor Danilovich Ovcharenko, ulitsa Kirova, 9, kv. 35; Alexei Dmitrievich Chugai, ulitsa Gvardeiskaya, 21, both of Kiev; Karl Lazarevich Tsantker, ulitsa Gogdya, 19, kv. 4, Poltava; Dmitry Danilovich Logvinenko, ulitsa Kalinina, 5, kv. 5, Poltava; Oleg Parfirovich Shelyakov, ulitsa Kalinina, 5, kv. 100, Poltava; Ljudmila Efimovna Chechik, ulitsa Krasnoarmeiskaya, 58, kv. 2, Kiev; Alla Mikhailovna Belonozhko, ulitsa Frunze, 108, kv. 4, Poltava; Ekaterina Alexandrovna Morozko, ulitsa K.Libknekhta, 22, Poltava; Ljudmila Nikolaevna Kuzmina, ulitsa Almaznaya, 4, kv. 191, Poltava; Nadezhda Vasilievna Vdovenko, ulitsa Kapitonovskaya, 10, kv. 51, Kiev; Nikolai Grigorievich Vasiliev, ulitsa Kapitonovskaya, 6, kv. 8, Kiev, and Nina Ivanovna Soloshenko, Prospekt Nauki, 142, korpus 9. kv. 22, Kiev, all of U.S.S.R.

Filed Jan. 12, 1972, Ser. No. 217,244

Claims priority, application U.S.S.R., May 17, 1971, 1653307

Int. Cl. B02c *19/00*

U.S. Cl. 241—1 7 Claims



A method for the activation of loose ingredients for elastomer mixes which comprises increasing the specific surface area of said ingredients by subjecting loose ingredient particles to the action of ferromagnetic bodies in a running electromagnetic field.

3,829,029

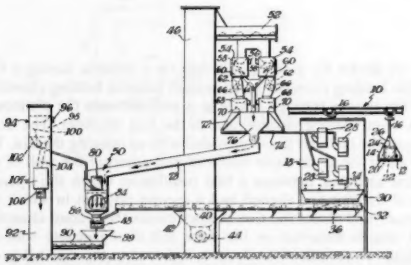
ABRASIVE BLAST CLEANING SYSTEM

James H. Carpenter, Hagerstown, Md., and Joseph E. Bowling, Jr., Waynesboro, Pa., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 108,417, Jan. 21, 1971, Pat. No. 3,716,947. This application Nov. 15, 1972, Ser. No. 306,769

Int. Cl. B02c *19/00, 23/00*

U.S. Cl. 241—19 9 Claims



An abrasive blast cleaning system includes blast means for granulating and scouring the sand removed from a no-bake mold whereby the sand is reconditioned for reuse in a subsequent no-bake molding operation.

3,829,030

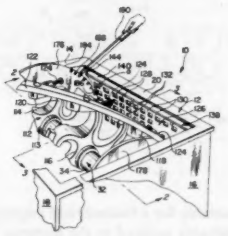
CAM PLATE ADJUSTMENT FOR RECUTTER SCREEN OF FORAGE HARVESTER

Jerome A. Wallenfang, and Wilmer E. Witt, both of Appleton, Wis., assignors to Koehring Company, Milwaukee, Wis.

Filed Jan. 30, 1973, Ser. No. 328,068

Int. Cl. B02c *13/282*

U.S. Cl. 241—89.1 11 Claims



A forage cutter includes a housing having a pair of end walls, rotary cylinder shaft journaled for rotation in the end walls, a rotary cutter mounted on the shaft and having a plurality of cutting knives, a shapeable recutter screen positioned in coacting shearing relation with the cutting knives, and rotatable cam means engaged with the recutter screen. The cam means has a curved abutment edge of decreasing radius about its circumference for positioning and controlling the radius of the recutter screen.

3,829,031

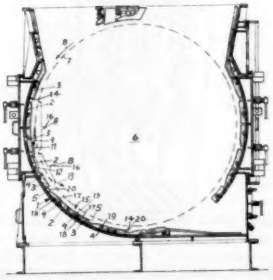
WEAR PLATE

Heinz Kron, Oberhausen, and Helmut Grommes, Duisburg-Meiderich, both of Germany, assignors to Babcock & Wilcox Limited, London, England

Filed Sept. 22, 1972, Ser. No. 291,472

Int. Cl. B02c *17/22*

U.S. Cl. 241—182 2 Claims

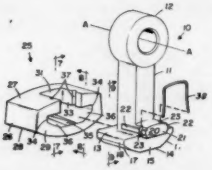


A beater mill housing liner formed of a plurality of circumferentially spaced and consecutively arranged wear plate sets cooperating with one another to protect the housing and wear plate sets connecting parts from erosion and to promote the passing of particulate matter into the beater zone.

3,829,032
HAMMER ASSEMBLIES WITH REVERSIBLE TIPS FOR HAMMERMILLS

Vernon L. Schrimper, Cedar Rapids, Iowa, assignor to Iowa Manufacturing Company, Cedar Rapids, Iowa

Filed Oct. 2, 1972, Ser. No. 294,173
Int. Cl. B02c 13/28
U.S. Cl. 241—197 14 Claims

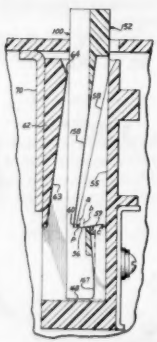


A hammer assembly for a hammermill employs a reversible hammer tip removably secured to the hammer arm by means of an interlocking joint, preferably of a generally T-shaped configuration. A large portion of the joint is formed by complementary tapered surfaces in order to ease removal of the tip after the joint has become "limed." The remainder of the joint is formed by several pairs of complementary surfaces parallel to the swinging axis of the hammer assembly. These surfaces receive the centrifugal, centripetal and side crushing forces on the tip which otherwise would tend to separate the tip from the arm, especially before the joint has become limed, owing to the tapered portions of the joint. A wire clip temporarily interlocks the arm and the tip until liming of the joint is sufficient to retain the tip on the arm.

3,829,033
TAPE CARTRIDGE AND PLAYER APPARATUS

Bernard A. Cousino, Toledo, Ohio, assignor to Faraday, Inc., Ann Arbor, Mich.

Filed Oct. 20, 1971, Ser. No. 190,884
Int. Cl. B65h 17/48; G11b 15/66
U.S. Cl. 242—55.19 A 4 Claims

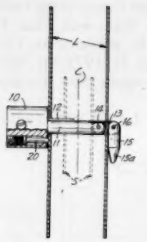


The disclosure describes apparatus for guiding and releasably locking an endless tape loop cartridge in relationship to the head of a corresponding player unit. The apparatus includes ramp surfaces placed on either side of the cartridge between the top and base thereof that are each terminated in a locking surface. Corresponding ramp and locking surfaces in the player unit cooperate with the cartridge in order to releasably lock it into playing position. The base of the cartridge is preferably cut away to expose tape guide means positioned adjacent the front edge of the cartridge for guiding a loop of tape across the front of the cartridge. In addition, the pressure pad of the cartridge is arranged so that it normally makes contact with the edge of a rotatable disc that supports the tape in order to perform a braking function.

3,829,034
REEL SPINDLE FOR MULTIPLE WIDTH REELS

Maurice G. Mickelson, Minneapolis, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Mar. 16, 1973, Ser. No. 341,965
Int. Cl. B65h 17/02
U.S. Cl. 242—68.3 3 Claims

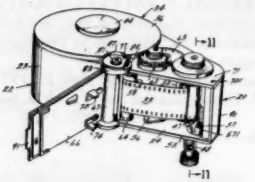


This is a reel spindle specifically constructed to accommodate reels of different widths while maintaining the same center line for the reels. This is accomplished by means of a multiple jointed spindle in combination with a spring pressed centering pin.

3,829,035
BULK FILM LOADING DEVICE

Nickolas A. Backscheider, 4415 Appleton Ave., Mariemont, Ohio 45209

Filed Nov. 9, 1972, Ser. No. 305,053
Int. Cl. G03b 17/26
U.S. Cl. 242—71.7 5 Claims



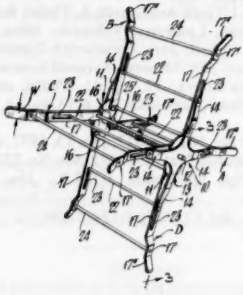
A device for loading bulk film on a cassette having a first film holding chamber and a second cassette holding chamber. Film passes through a slot in a wall between the chambers. A drum member is mounted in the first chamber. The drum member includes a wall provided with an opening therein. The wall of the drum turns inside of and adjacent the wall of the first chamber between a first position in which the opening and the slot are aligned and a second position in which the drum wall closes the slot. A door closes the second chamber. A disc is mounted on the door and is engageable with the drum. A socket in the drum is opposed to the disc when the drum is in slot closed position. A portion of the disc advances into the socket when the door is open to lock the drum against turning when the door is open. When the door is closed, the drum enters a cut away portion of the disc when the drum is turned to slot open position to lock the door against opening when the drum is in slot open position.

3,829,036

COLLAPSIBLE SWIFT

Ernest D. Meadows, and Robert B. Buffington, both of Atlanta, Ga., assignors to Meadows Industries Inc., Atlanta, Ga.

Filed Nov. 22, 1972, Ser. No. 308,737
Int. Cl. B65h *75/24*
U.S. Cl. 242—110.1 10 Claims



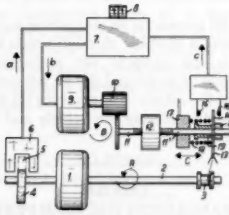
The invention contemplates an improved construction for a swift, being a frame used for the handling of yarn skeins, in the course of textile-yarn finishing. The new swift features radial collapsibility, from a resiliently preloaded or normal outer perimeter of yarn support, to a transiently retainable inner perimeter of yarn support, whereby the swift may be axially inserted within a tensed skein, and then released from its inner-perimeter condition to immediately resiliently engage and support the skein at or near the outer-perimeter condition. Once thus engaged, the swift and skein may be readily handled, stored, and loaded into an unwinder, for development of yarn cones or tubes.

3,829,037

THREAD WINDING APPARATUS

Pierre Sallin, Geneva, Switzerland, assignor to Productions Sarcem S.A., Geneva, Switzerland

Filed June 12, 1972, Ser. No. 261,808
Claims priority, application Switzerland, June 25, 1971, 9325/71
Int. Cl. B65h *54/28*
U.S. Cl. 242—158.2 1 Claim



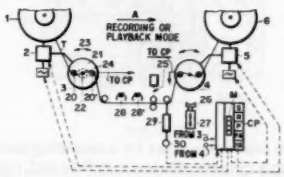
The invention relates to an apparatus for obtaining a linear displacement of a first element as a function of a rotary movement and can be advantageously used on thread-winding machines. The apparatus comprises means for shifting the lineary displacable element at the end of the reciprocatory stroke.

3,829,038

TAPE RECORDING TRANSPORT CONTROL SYSTEM

Willi Studer, Althardstrasse 150, Regensdorf, Switzerland

Continuation of Ser. No. 812,208, April 1, 1969, abandoned. This application Nov. 29, 1971, Ser. No. 202,903
Claims priority, application Switzerland, July 24, 1968, 11067/68
Int. Cl. B65h *25/22, 25/06, 25/32*
U.S. Cl. 242—190 7 Claims



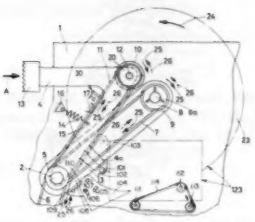
A pair of tape tension sensors are included in the tape path, one each between reel and tape heads, and a motion sensing mechanism, such as a tachometer generator connected to an idler or a guide pulley, provides tension and motion, as well as direction of motion information; tension information is transmitted to pay out and take up motors to effect braking and wind-up, and, upon stopping, the motion sensor combined with tension sensors provides information controlling braking and drag of the motor to prevent tape spill, while maintaining proper tension on the tape during running.

3,829,039

MOTION PICTURE PROJECTOR WITH FILM STRIPPING MECHANISM

Fritz Krumbein, Stuttgart-Mohringen, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Aug. 28, 1972, Ser. No. 284,380
Claims priority, application Germany, Aug. 17, 1971, 2141083
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—192 10 Claims



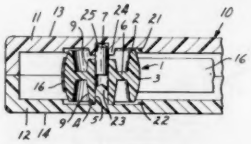
A motion picture projector wherein a stripping mechanism threads the leader of motion picture film has a manually operable lever which carries a friction coupling serving to rotate the shaft for the core of the supply reel in a direction to collect the film while the band of the stripping mechanism engages the outermost film convolution. The coupling becomes ineffective when the convolutions of the film are tightly packed around the core of the supply reel. The shaft for the supply reel can be rotated by the motor which drives the coupling when the operation of the motor is reversed whereby the supply reel collects the film by drawing it off the takeup reel.

3,829,040

COLLAPSING PIN ROLLER FOR TAPE CASSETTE

Norman E. Nelson, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 25, 1973, Ser. No. 373,034
Int. Cl. G03b 1/04; G11b 15/32, 23/04
U.S. Cl. 242—199 7 Claims



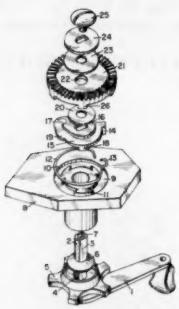
A rotatable tape guide roller for a recording tape cartridge is formed with a cylindrical exterior surface and a central bore into which one end of a spindle is inserted to mate therewith in an interference fit. The other end of the spindle protrudes into a bearing formed in a sidewall of the cartridge to aid in rotatably securing the roller therein, and the insertion of the spindle in the bore may be adjusted to vary the end play of the spindle in the bearing to provide an optimum dimensional roller tolerance.

3,829,041

FISHING REEL DRIVE MECHANISM

Alain Robert Nepote, Cluses, France, assignor to Etablissements Carpano & Pons S.A., Cluses, France

Filed July 24, 1972, Ser. No. 274,794
Claims priority, application France, July 26, 1971, 71.27295
Int. Cl. A01k 89/02
U.S. Cl. 242—218 4 Claims



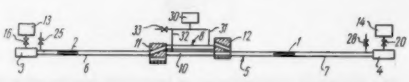
A fishing reel driving and drag mechanism includes a driving piece secured for rotation with the shaft of a winding handle, and an arcuate lever pivotally mounted on the driving piece about an axis parallel to said shaft. When the handle is rotated in a winding direction, said lever pivots to an outer position in which an outer protuberance on the lever drivable engages a corresponding eccentric protuberance on a driving member which is driven in a corresponding winding direction without slip. If the winding handle is inadvertently rotated in an unwinding direction, or when the driving member is rotated in the unwinding direction, said lever pivots to its inner position in which an inner protuberance jams with a fixed stop to immobilize said handle whilst said driving member can continue to rotate with a certain drag. Pivoting of said lever can, at least partially, be provided by a spring tending to immobilize the free end of the lever.

3,829,042

INSTALLATION FOR PNEUMATIC CONVEYANCE OF CONTAINERIZED LOADS THROUGH A TUBE

Ivan Mikhailovich Torochkov, ulitsa Gorogo, 41, kv. 99, Moscow; Georgy Samsonovich Kobulia, Prospekt Chavchvadze, 11, kv. 9, Tbilisi; Adolf Martitsovich Alexandrov, Federativny Prospekt, 6, korpus 3, kv. 8, Moscow; Ippolit Davidovich Suladze, Prospekt Chavadze, 11, kv. 41, Tbilisi; Leonid Arkadievich Matskin, Krasnoarmeiskaya ulitsa, 26, korpus 2, kv. 23, Moscow; Zurab Dmitrievich Gambashidze, 1 Tupik Arakisnvill, 8, Tbilisi; Ruben Dzhangirovich Balayan, Ljubertsy, Volkovsky ulitsa, 9, kv. 31, Moskovskaya Oblasti; Jury Abramovich Tsimbler, Sojuzny Prospekt, 10, kv. 261, Moscow; Avtandil Semenovich Kakhniashvili, ulitsa Eliava, 37, kv. 41, Tbilisi, and Vladimir Efimovich Aglitsky, Zatsepsky Val, 6/13, kv. 61, Moscow, all of U.S.S.R.

Continuation of Ser. No. 106,017, Jan. 13, 1971, abandoned.
This application Mar. 23, 1972, Ser. No. 237,509
Claims priority, application U.S.S.R., Jan. 20, 1970, 1395307
Int. Cl. B65g 51/34, 51/36
U.S. Cl. 243—3 2 Claims



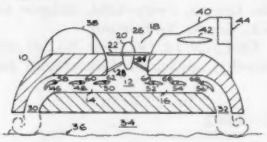
An installation for the pneumatic conveyance of containerized loads through a tube in which the main tube connecting the loading and unloading stations is divided into two sections with a by-pass section therebetween. The by-pass section consists of two parallel tubes which are connected alternately to the sections of the main tube by means of switches located on both sides of the parallel tubes.

3,829,043

HOVERCRAFT SECONDARY LIFT SYSTEM

William Benson, P.O. Box 5194, San Bernardino, Calif. 92404

Filed Dec. 13, 1971, Ser. No. 207,380
Int. Cl. B64c 29/00
U.S. Cl. 244—12 R 7 Claims



A secondary lift system for an air cushion supported vehicle of the type having a chamber through which a flow of air is maintained. Air foil surfaces are positioned within the chamber. The flow of air around the air foil surfaces provides secondary lift for the vehicle. The resulting lift from the air foil surfaces is utilized to elevate the vehicle and to control the inclination of the vehicle.

3,829,044

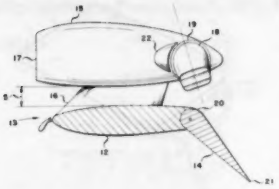
ENGINE ARRANGEMENT FOR HIGH PERFORMANCE STOL AIRCRAFT

Henry R. Leslie, Atlanta, and Roger J. Samways, Marietta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Mar. 23, 1973, Ser. No. 344,240
Int. Cl. B64c 3/38
U.S. Cl. 244—13 5 Claims

A form of power augmented high lift for aircraft mounts engine nacelles on overwing pylons. The nozzle system is a vec-

toring device such that the engine exhaust flow is caused to impinge on the upper surface of the flap at any flap angle. The vector device may be any of several types, such as the swivel nozzle illustrated, and is linked to the flap system to ensure optimum impingement angle on the surface providing flow attachment and a jet sheet extension to the trailing edge. In cruise the nozzle system directs the exhaust aft so that no flow interference with the wing/flap surface occurs.

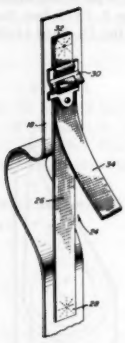


3,829,045

RISER CONTROLS FOR GLIDING PARACHUTES

Stephen L. Snyder, 331 Cherry Hill Blvd., Cherry Hill, N.J. 08034

Filed Apr. 14, 1972, Ser. No. 244,034
Int. Cl. B64d *17/34*
U.S. Cl. 244—152 **11 Claims**



The effective length of risers interconnecting a body harness and the suspension lines of a forward glide-type parachute, are differentially varied to exercise control over the canopy for attitude control purposes. Frictional buckle devices and control straps on one or more of the risers enables the chutish to infinitely vary the relative spacing between the ends of the risers.

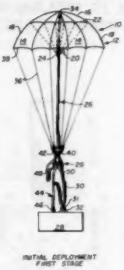
3,829,046

PROGRAMMABLE, REVERSIBLE DRAG, MULTI-STAGE PARACHUTE

Jon T. Matsuo, and Lawrence E. Neipling, both of El Centro, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 16, 1973, Ser. No. 341,808
Int. Cl. B64d *17/34*
U.S. Cl. 244—152 **11 Claims**

A multi-stage, variable drag parachute wherein the canopy drag area can be reversibly increased or decreased in programmable increments during deployment by means of one or more variable length, non-elastic control lines. The length of the control lines are controlled at a point remote from the canopy by releasable connections that deploy the respective canopy increments, each deployed canopy increment being self-sustaining as an independent and integral portion of the entire canopy.

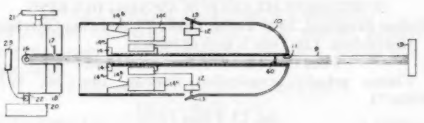


3,829,047

AERIAL BOMB AND OPTICAL LIGHT BEAM GUIDANCE SYSTEM THEREFOR

Joseph E. Gonsalves, 5813 40th Ave., Hyattsville, Md. 20782

Filed Sept. 29, 1972, Ser. No. 293,345
Int. Cl. F41g *7/00*
U.S. Cl. 244—3.16 **36 Claims**



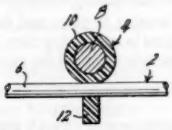
An optical light beam guiding system comprising the use of a single concentrated parallel small diameter beam of light rays, which may be of the visible, or invisible, ultraviolet or infra-red, or laser or maser type. They may also be produced by the use of a light source which itself produces a light with a narrow restricted range of wave lengths.

3,829,048

WIRE FABRIC

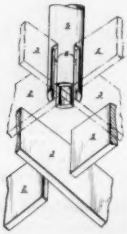
Thomas W. Platt, and Harmon W. Arnold, both of Carthage, Mo., assignors to Flex-O-Lators, Inc., Carthage, Mo.

Filed Sept. 11, 1972, Ser. No. 287,772
Int. Cl. B21f *27/00*
U.S. Cl. 245—1 **10 Claims**



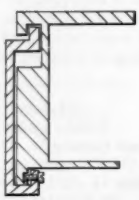
A wire fabric consisting of sets of longitudinal strands and cross strands, at least one of said sets including spring steel wires, the cross strands piercing said longitudinal strands to prevent slippage thereof lengthwise of said longitudinal strands, the cross strands being gripped frictionally in the longitudinal strands, or offset laterally at each of the longitudinal strands, or both, to prevent lengthwise slippage of the cross strands relative to the longitudinal strands.

3,829,049
FURNITURE SUPPORT
Fred C. Hughes, 119 Mary Rd., and James C. Hughes, 905 Nance Ave., both of High Point, N.C. 27260
Filed Sept. 27, 1972, Ser. No. 292,684
Int. Cl. F16m *11/20*; **B23k** *31/02*
U.S. Cl. 248—188.7 **13 Claims**



A pedestal support for furniture comprising first and second support members affixed to opposite sides of a third support member, intermediate the ends thereof, forming a cross member. A post having longitudinal slots in one end is placed over the cross member with the cross member received in the slots, and is then welded to the cross member, the weld filling the void between the cross member and the post.

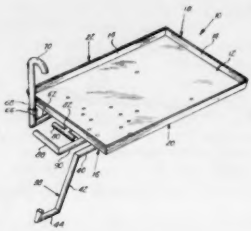
3,829,050
SUSPENSION MEANS FOR AWNING HOUSING
Steinar Brautaset, 2040 Klofta, Bakke 77, and Finn Otterbeck, Gravdalsvn. 12b, Oslo 7, both of Norway
Filed Dec. 12, 1972, Ser. No. 314,454
Claims priority, application Norway, Dec. 30, 1971, 4986/71
Int. Cl. F16m *13/02*
U.S. Cl. 248—223 **1 Claim**



Suspension means for awning housing of the type which securely locks the housing in place and does not permit the housing to be displaced in lateral direction, and makes it possible for unqualified people to mount the awning.

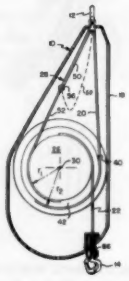
3,829,051
DETACHABLE SUPPORT TRAY FOR LADDERS
George Harvey Emmons, 11 S. 12th St., Marshalltown, Iowa 50158
Filed May 9, 1973, Ser. No. 358,584
Int. Cl. F16m *13/02*
U.S. Cl. 248—238 **8 Claims**

A tray for supporting paint cans, buckets, tools and the like is quickly and easily removably attachable to or removable from the side rail of a ladder. This tray includes a latch assembly which can be manually manipulated by one hand to secure it to or change it from selected points of attachment on a ladder as may be desired for convenient access. When mounted, this tray extends laterally outwardly from the ladder so as to not interfer with the normal use of the ladder. It is



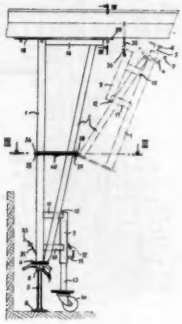
foldable into a compact unit for storage or transportation and is adjustable for accommodation to ladder side rails of different thicknesses.

3,829,052
VIBRATION ISOLATOR
William G. Flannelly, South Windsor, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.
Filed May 1, 1972, Ser. No. 249,131
Int. Cl. F16f *15/06*
U.S. Cl. 248—317 **15 Claims**



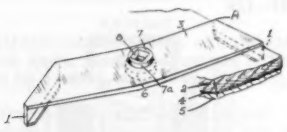
A vibration isolator for reducing the transmission of vibrations between a supporting body and a body suspended from the supporting body employs suspension cables which are wrapped around a rotatable inertial mass in such a manner that the rotations of the mass will reel in one of the cables while other of the cables are paid out. The cables are connected to cylindrical surfaces of different diameters so that loads transmitted from one of the cables through the rotatable mass to the other cables generate a torque which causes the mass to rotate. A resilient tether connected to the mass urges the mass to rotate toward a static position in which the torque applied to the mass by the tether is balanced by the torque generated by the cables. In the presence of vibratory loads, the tether allows the rotatable mass to oscillate about the static position. By appropriate tuning of the mass and the resilient tether, it is possible to generate an antiresonance condition in which the vibrator isolator exhibits a zero impedance or transmissibility characteristic for vibratory loads of a given frequency.

3,829,053
TRIPOD SUPPORTING A FRAMING TABLE FOR CONCRETE WORKS
Jacques Bournazel, Wissous, France, assignor to Societe Pour L'Industrialisation du Materiel "Indumat", Essone, France
Filed Sept. 7, 1972, Ser. No. 286,961
Claims priority, application France, June 1, 1972, 72.19719
Int. Cl. F16m *13/00*
U.S. Cl. 248—354 S 4 Claims



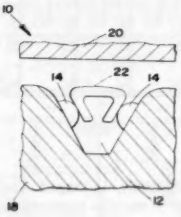
A jack comprises an inverted tripod divided substantially in half in two portions of substantially equal height, the lower portion including a jack structure of small compass.

3,829,054
MOUNTING OF SHEET MATERIAL
Horst Joseph Heilmeier, 107 Struben St., Benoni, South Africa
Filed Nov. 21, 1972, Ser. No. 308,505
Claims priority, application South Africa, Dec. 9, 1971, 70/8178
Int. Cl. A47g *1/16*
U.S. Cl. 248—490 10 Claims



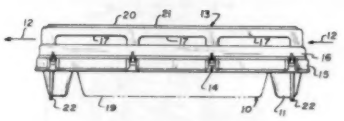
A pair of spaced apart gripping formations are located at an angle to each other, the gripping formations being operative to engage a pair of adjacent edges of a backing member meeting at a common corner in positions spaced from the common corner and also to engage sheet material superimposed on a front face of the backing member. A resilient locking element connects the two gripping formations and is arranged to extend along the rear of the backing member across the common corner in a position spaced therefrom, and a catch formation extends transversely from the locking element and is engageable and disengageable with a recess in the rear face of the backing member by displacement of the locking element in a direction transverse to the plane of the backing member, the locking element being operative resiliently to bias the catch formation towards engagement with the recess in the backing member.

3,829,055
MOLD FOR LOCATING TRANSVERSE REINFORCEMENTS IN ENDLESS TRACK
Paul E. Russ, Sr., Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.
Filed July 21, 1972, Ser. No. 273,919
Int. Cl. B22d *19/02*
U.S. Cl. 249—91 6 Claims



A mold for endless track of the polymeric type. The mold includes small protuberances in the mold concavities for positioning, transversely aligning, and spacing stiffening members of generally rod shape. The stiffeners are preferably prepositioned in a spaced apart manner on a textile strip during the process of track assembly. The stiffeners are held in proper position while the polymer of the track is cured.

3,829,056
APPARATUS FOR FREEZING ICE BODIES
Cecil J. Baker, Newburgh, Ind., and Leo G. Beckett, Henderson, Ky., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed June 12, 1972, Ser. No. 261,948
Int. Cl. B28b *7/24*
U.S. Cl. 249—121 6 Claims

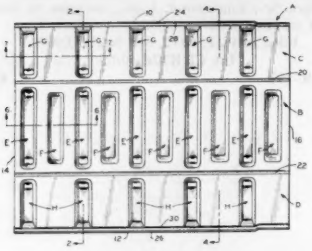


An apparatus for freezing ice bodies having a freezing tray and a separable cover connected thereto by improved hinge means and with the cover having edge openings permitting the circulation of subfreezing air beneath the cover and across the surface of water in the freezing tray molds.

3,829,057
CONCRETE FORM
Leo Fuchs, Springfield, Tenn., assignor to The mansfield Tire & Rubber Company, Mansfield, Ohio
Filed Feb. 9, 1973, Ser. No. 331,102
Int. Cl. B28b *7/28*; B29c *1/12*
U.S. Cl. 249—175 6 Claims

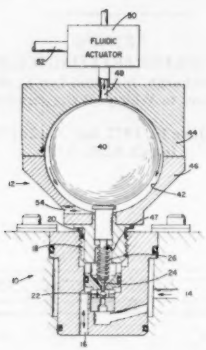
A substantially rigid concrete form of compressed fibers is made in a substantially flat rectangular configuration. The form includes a central section and opposite side sections connected thereto by fold lines defined by rounded grooves. The side sections are foldable along the grooved fold lines relative to the central section to make a substantially U-shaped concrete form. The central section and side sections have longitudinally-spaced transverse stiffening ribs therein. At least

certain of the central stiffening ribs and side stiffening ribs have end portions abutting one another when the form is



folded to its substantially U-shaped configuration. This abutting relationship of the ribs supports the central section on the side sections.

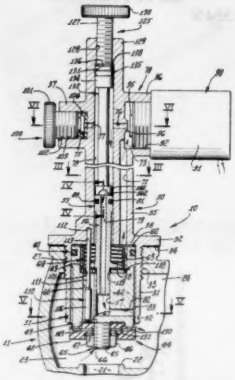
3,829,058
FLUIDIC VALVE MODULATOR
Joseph J. Andersen, Bristol, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed July 18, 1972, Ser. No. 272,755
Int. Cl. F16k *31/43*
U.S. Cl. 251—25 **9 Claims**



A fluidic valve control which may be operated in a time modulated mode is disclosed. The position of a valve member is modulated by means of the generation of Bernoulli forces in a fluidic actuator which is mechanically coupled to the valve.

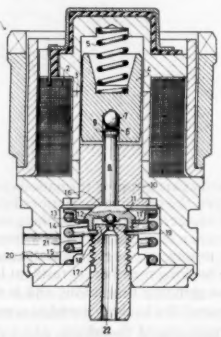
3,829,059
AUTOMATIC VALVE ADAPTER
William A. Rupert, San Gabriel, Calif., assignor to Dial Industries, Inc., Los Angeles, Calif.
Filed June 8, 1973, Ser. No. 368,030
Int. Cl. F16k *31/02*
U.S. Cl. 251—26 **10 Claims**

An adapter attachable to a valve body having an inlet port and an outlet, and including a housing provided with an operating chamber; a piston in the chamber having a larger diameter than the inlet port and provided with a lower closure member sealable with said inlet port, and a spring biasing the piston toward sealing position; an inlet passage through the piston from the inlet port to the operating chamber; pilot valve means for bleeding liquid from the operating chamber to permit inlet water pressure to force the piston closure member upwardly away from the inlet port thus opening the main valve. The pilot valve is desirably solenoid operated, and manual override pilot valve means are provided, which may be incorporated in the solenoid. A washer shiftably mounted in the piston has an aperture constituting an orifice in the piston inlet passage. A control rod fixed to the housing projects



through the orifice to restrict liquid flow therethrough, and has a portion of enlarged section which enters the orifice as the closure member approaches valve closed position, in order to gently close the valve and thus avoid water hammer in the system. A spring wire bail serves during assembly to retain the piston in the housing against the force of the spring. Throttle means limit the upward of opening movement of the piston and closure member.

3,829,060
MAGNET VALVE
Alexander von Lewis, Menar, Mauren, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 8, 1973, Ser. No. 330,515
Claims priority, application Germany, Feb. 22, 1972, 2208183
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 **7 Claims**



A magnet valve is provided with a valve body having a valve seat, and a spherical valve member which is mounted so that it can move in opposite directions into and out of engagement with the valve seat and has freedom of play transversely of its path of movement. Biasing springs bias the valve member in

one of those two directions of movement and an electromagnet is operable for moving the valve member in the opposite direction. A precentering arrangement serves for pre-centering the valve member with reference to the valve seat prior to engagement therewith.

3,829,061

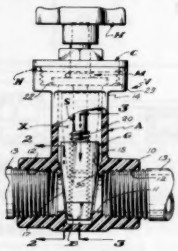
GATE VALVE SEAL

Eddy K. Dayne, Glendora, and Wilbur G. Land, Anaheim, both of Calif., assignors to Bagdad Plastics Company, Phoenix, Ariz.

Filed Sept. 20, 1971, Ser. No. 181,997

Int. Cl. F16k *3/12, 27/04*

U.S. Cl. 251—328 **13 Claims**



A gate valve structure including a unitary molded plastic body with a horizontal flow passage and a vertical valve chamber intersecting the flow passage and projecting upwardly therefrom; said chamber having flat, axially spaced, substantially oppositely disposed downwardly convergent seat faces on planes transverse the axis of the flow passage to cooperatively accommodate a vertically shiftable valve gate with flat, substantially oppositely disposed, downwardly convergent sealing faces, said seat faces having annular flexible sealing face engaging sealing beads formed integrally therein, about the flow passage; said beads being of uniform major axial extent throughout their circumferential extent and having flat sealing surfaces, the upper and lower portions of which occur on planes substantially parallel with the axis of the chamber and converge downwardly and join the seat faces.

3,829,062

DEFORMABLE SEALING RING ARRANGEMENT

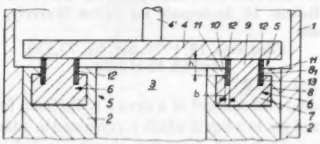
Heinrich Fend, Buchs, Switzerland, assignor to VAT Akiengesellschaft fur Vakuum-Apparate-Technik, Haag, Switzerland

Filed Sept. 13, 1972, Ser. No. 288,825

Claims priority, application Switzerland, Oct. 10, 1971, 14730/71

Int. Cl. F16k *25/00*

U.S. Cl. 251—332 **6 Claims**



An annular, undercut groove in the upper edge of a circular members carries a deformable sealing ring having a central rib projecting between opposite shoulders of the groove defined by the undercuts. Rigid enclosing rings surround the rib on both sides, bear against the shoulders, and fit into grooves in the sealing ring. When a flat member is pressed over the sealing ring the enclosing rings create an expansive pressure throughout the sealing ring, thus urging the central rib against the flat member and urging the enclosing rings against the shoulders.

3,829,063

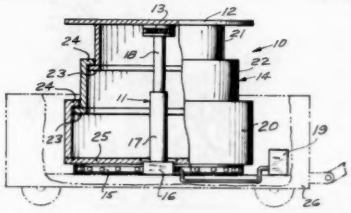
ARTICULATED PLATFORM FOR HAND TRUCKS AND THE LIKE

George R. Holzworth, Crove St. R.F.D., Plympton, Mass. 02367

Filed Mar. 14, 1973, Ser. No. 341,309

Int. Cl. B60p *1/00*

U.S. Cl. 254—2 R **1 Claim**



A platform primarily intended for installation on a hand-truck, can be raised and lowered hydraulically and rotated manually.

3,829,064

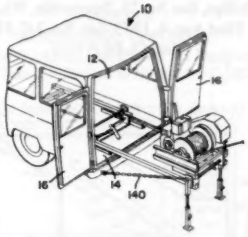
WINCH SYSTEM

Richard L. Jackson, Lewisburg, Ohio, assignor to Jackson Communication Corporation, Clayton, Ohio

Filed Jan. 5, 1973, Ser. No. 321,210

Int. Cl. B66d *3/00*

U.S. Cl. 254—166 **10 Claims**



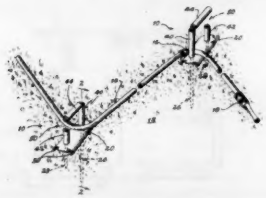
A winch system for pulling or towing work as might be used in construction, rigging, communications, power or any industry using a winch. As presented here the winch system is particularly adapted for towing cables being installed on an existing messenger strand. The system includes a motor vehicle having an enclosed compartment, a stationary track assembly mounted on a floor of the vehicle within the compartment, and a movable track assembly movable along the stationary track assembly between a stowed position within the compartment and an active position disposed outside the compartment. The movable track assembly carries an indexing frame on its outer end which rotatably mounts a winch base frame. Locking means are provided for locking the movable track assembly in either its stowed or active positions and for locking the winch base frame against rotation in any of several positions. The system also includes vertically adjustable stabilizing

legs pivotally mounted on the outer end of the movable track assembly and stabilizing chains which are also attached to the outer end of the movable track assembly and to some portion of the vehicle, such as the bumper thereof.

3,829,065
GUIDE

Raymond L. Less, 478 Groundly St., North Tonawanda, N.Y. 14150

Filed Mar. 1, 1972, Ser. No. 230,850
Int. Cl. B66d *1/36*
U.S. Cl. 254—190 C **7 Claims**

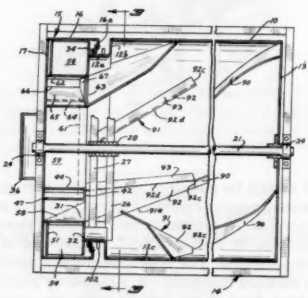


A guide for controlling the direction of movement of a flexible member, such as a garden hose. The guide features a pair of vertically disposed rollers journaled on an anchor rod and a steady anchor rod above a downwardly curved base plate through which the anchor rods extend, and a third roller journaled on a "bend-over" upper end of the anchor rod such as to overlie a hose retaining space between the pair of vertically disposed rollers. The third roller cooperates with the roller journaled on the steady anchor rod to define a horizontally arranged access opening through which a hose may be removably threaded into the hose retaining space, and serves as a convenient hand grip for removably inserting the anchor rods into the ground.

3,829,066
PARTICULATE MATERIAL MIXING MACHINE

Charles E. Phillips, Box No. 75, Downsville, Wis. 54735

Filed Apr. 4, 1973, Ser. No. 347,812
Int. Cl. B01f *9/06*
U.S. Cl. 259—3 **21 Claims**

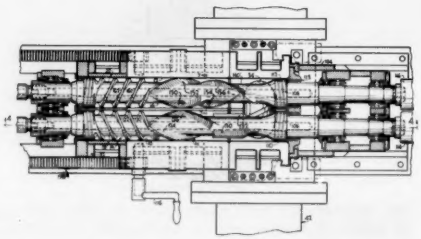


A particulate material mixing machine having a rotatable open ended drum with scoops attached thereto to elevate material within a stationary hood enclosing the drum open end and material received from a stationary hopper within the drum. Drum mechanism including troughs elevates material and directs it into the hopper, a baffle attached to the hood blocking any substantial flow of material from the drum to the scoops except that which passes through the hopper. A hood discharge chute receives material elevated by the scoops provided the closure therefor is open, and if closed the material is moved thereover to the inlet chute of the auger assembly which flings the material rearwardly to descend into the drum substantially throughout the axial length thereof. In one embodiment the scoops are stationary while in the other embodiment some of the scoops are pivotable relative the drum.

3,829,067
APPARATUS FOR COMPOUNDING RUBBER, ELASTOMER, PLASTIC AND LIKE MIXES

James T. Matsuoka, Brecksville, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio

Filed May 7, 1973, Ser. No. 358,015
Int. Cl. A21c *1/06*; B29b *1/10*
U.S. Cl. 259—192 **7 Claims**



Internal or closed chamber high shear mixing apparatus for compounding materials including solid ingredients which become gelatinous at temperatures above ambient temperature, such as, rubber, elastomer, plastic, and like mixes, in a continuous manner having a pair of parallel material processing rotors in side-by-side communicating chambers closed except for a material feed opening adjacent one end and a material discharge opening adjacent the other end communicating with a screw controlled discharge conduit offset from and extending transversely of the axes of rotation of the rotors. Each rotor has a material conveying screw section adjacent the material feed opening followed by a material processing section comprising two pairs of discrete material processing blade portions offset axially with respect to one another. Both pairs of blade portions of one rotor are helically orientated moré lengthwise of the axis of the rotor than circumferentially thereof and twist in opposite directions with the pair adjacent the discharge of the material processing chamber having a lower helix or lead angle than that of the other pair. The other rotor has one pair of helically orientated material processing blade portions extending more lengthwise of the axis of the rotor than circumferentially thereof and the other pair orientated lengthwise of the rotor axis.

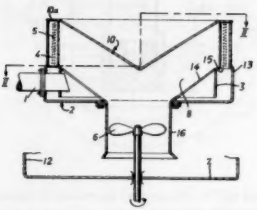
3,829,068
DEVICE FOR THE DISTRIBUTION OF GAS IN A LIQUID

Rudolf Hohne, 18 Springvale Rd., Glen Waverly, Victoria, Australia

Filed Sept. 18, 1970, Ser. No. 73,530
Int. Cl. B01f *3/04*
U.S. Cl. 261—36 R **9 Claims**

A specific embodiment of a device is disclosed for the distribution of gas in a liquid which is contained in a tank having a bottom and side wall. A gas flow chamber includes an annular, hollow body having an outer wall, an inner wall, a partition wall between said inner and outer walls and a top wall having a plurality of holes. A liquid flow chamber has liquid inlet means and liquid outlet means and is fixedly mounted with respect to the gas flow chamber. A pump is used for causing the liquid to flow out of the tank through the stationary flow chamber and

out of the liquid outlet means back into the tank. The gas outlet means includes a plurality of straight, vertically extending tubes closed at the top and registered at the bottom with the holes located in the top wall of the annular, hollow body. The vertically extending tubes are spaced with respect to each other around the top wall of the annular body so that there are gaps between adjacent tubes. The vertically extending tubes



include said plurality of gas openings which are arranged to face the gaps between the tubes. A substantially uniform flow of gas is directed through the openings and gas bubbles are removed directly at the gas openings by a flow of liquid which is passing out of the liquid outlet means. The gas bubbles are removed directly at the openings with a minimum amount of turbulence.

3,829,069

AIR VALVE CARBURETOR WITH ENGINE STARTING FUEL ENRICHMENT MEANS

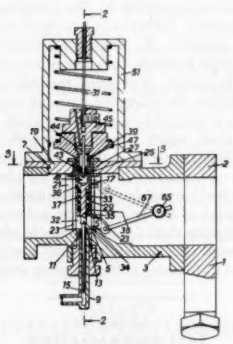
Victor L. Hailstone, Chelmsford; Ronald N. Harper, Rayleigh, and Wilfred T. Oliver, Rugby, all of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed June 5, 1972, Ser. No. 259,419

Claims priority, application England, June 10, 1971, 19867/71

Int. Cl. F02m *1/14*

U.S. Cl. 261—44 R **10 Claims**



An air valve carburetor has an engine starting fuel supply line with an outlet downstream of the throttle valve and an inlet controlled by a spring opened valve that is closed by engine running level vacuum, a second valve in the supply line between the first valve and the outlet being connected to the throttle valve so that opening the throttle valve a predetermined amount moves the second valve to close the fuel supply line irrespective of a low vacuum level at this time being insufficient to maintain the inlet control valve closed.

3,829,070

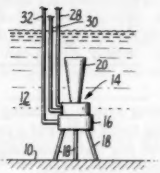
GASIFICATION SYSTEM

Imants Reba, and Edward C. Wolthausen, both of Vancouver, Wash., assignors to Crown Zellerback Corporation, San Francisco, Calif.

Filed Oct. 13, 1972, Ser. No. 297,555

Int. Cl. B01f *3/04*

U.S. Cl. 261—77 **15 Claims**



A system of gasifying a liquid utilizing the "Coanda effect." In the system a fluid is directed through a slit under pressure whereupon it attaches itself to a flow attachment surface and entrains the liquid to be gasified. A gas is admitted to the entrained liquid flow path with resultant high degree of turbulent mixing and high shear at the gas-liquid interface. This causes the formation of great numbers of small bubbles which are ejected along with the entrained liquid into the body of the liquid to be gasified.

3,829,071

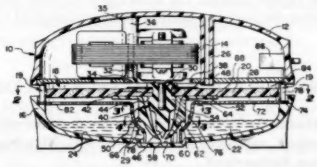
ROOM ODOR CONTROL

Bruno M. Valbona, Avon, and Harry M. Voglesonger, Riverton, both of Conn., assignors to Dynamics Corporation, New York, N.Y.

Filed June 19, 1972, Ser. No. 264,135

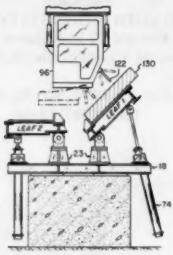
Int. Cl. C10j *1/12*

U.S. Cl. 261—89 **9 Claims**



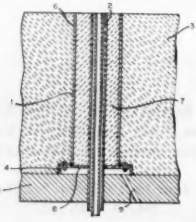
A dispenser for liquids controlling room odors in which controlled amounts of liquid are dispersed in a washable disk of expanded plastic rotated in a confined compartment to induce a mild circulation of air therethrough whereby vapor from the liquid is imparted to the air and airborne particles of smoke are removed from the air.

3,829,072
METAL SLAB CONDITIONING SYSTEM
Arthur H. Fieser, P.O. Box A, Allison Park, Pa. 15101, and Loreley S. Mobley, 4420 Sebald Dr., Franklin, Ohio 45005
Filed Nov. 13, 1972, Ser. No. 305,794
Int. Cl. B23k 7/00, 7/06, 7/10
U.S. Cl. 266—23 H 5 Claims



A slab conditioning system including a pair of rotatable leaves for supporting metal slabs and a conditioning tool platform mounted above the leaves and adapted to traverse the slab during the conditioning process.

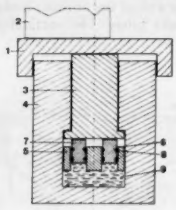
3,829,073
DEVICES BLOWING-IN OXYGEN THROUGH THE BOTTOMS OF METALLURGICAL CONVERTERS
Camille Alphonse Courard, Angluer, Belgium, assignor to Centre de Recherches Metallurgiques, Brussels, Belgium
Filed Dec. 8, 1972, Ser. No. 313,382
Claims priority, application Belgium, Dec. 8, 1971, 776428
Int. Cl. C21c 5/48
U.S. Cl. 266—41 11 Claims



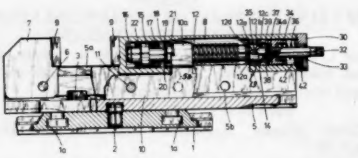
An arrangement for preventing hydrocarbon from forming an accumulation in the region adjacent to the outlet end of the dual tube tuyere utilized for blowing-in oxygen and a liquid hydrocarbon through the bottom of a metallurgical converter.

3,829,074
WORK-TABLE ON MACHINES FOR PROCESSING METAL
Eduard Hanni, Zofingen, and Walter Gygli, Niderpipp, both of Switzerland, assignors to Hammerle A.G. Maschinenfabrik, Zofingen, Switzerland
Filed Dec. 18, 1972, Ser. No. 316,016
Claims priority, application Switzerland, Dec. 22, 1971, 11026/71
Int. Cl. F16f 7/00
U.S. Cl. 267—130 2 Claims

A work-table having a table panel, a support element which supports the table panel across a load bearing dimension of the panel, and itself defines over the same dimension with a bottom part an oil chamber the oil in which will support the support element and panel, via an vertically displaceable separation member. This separation member is in the form of a number of pistons, displaceably arranged in bores of a plate between support element and oil, or in the form of a diaphragm.



3,829,075
VISE
Gerhard Dziuballe, and Albrecht Weber, both of Hilchenbach, Germany, assignors to Maschinenfabrik Hilma Gesellschaft mit beschrankter Haftung, Hilchenbach, Germany
Filed Sept. 21, 1972, Ser. No. 290,865
Int. Cl. B25b 1/18
U.S. Cl. 269—28 3 Claims

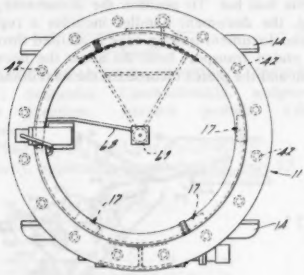


A vise having a fixed clamping jaw and a clamping carriage mechanically movable relative to the clamping jaw by means of a threaded spindle. Such vise is equipped with a fluid pressure operable amplifier, the amplifying pressure of which is conveyed to a high pressure chamber provided in the clamping carriage. The supply of pressure medium is controlled by valve means. When the clamping carriage engages the work piece, the valve is opened by means of an axial relative motion of a coupling shaft which is connected with the spindle by means of a disengageable clutch. The coupling shaft is operated by a crank handle which, when the clutch is engaged, also effects the mechanical feeding movement of the clamping carriage by means of the spindle. The automatic disengagement of the coupling shaft from the spindle and the axial and control movement of the coupling shaft resulting therefrom may be blocked by pressing in the coupling shaft.

3,829,076
DIAL INDEX MACHINE
Hugh M. Sofy, 201 Warrington, Bloomfield Hills, Mich. 48013
Filed June 8, 1972, Ser. No. 261,065
Int. Cl. B23q 1/00
U.S. Cl. 269—57 7 Claims

A machine for indexing workpieces to a succession of work stations. A base supports a lightweight fabricated indexable work holding ring which supports workpieces outwardly and

above the base. The work stations carried by the base are thus inside the ring, permitting easy accessibility to the ring. A cam



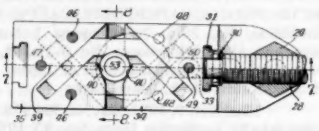
drive mechanism is mounted outwardly of the base and under the ring. Piping and wiring may extend radially from the base center.

3,829,077

ADJUSTABLE CLAMPING MEANS

Richard V. Strybel, Elk Grove Village, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Mar. 27, 1972, Ser. No. 238,256
Int. Cl. B25b *1/02, 1/12, 1/24*
U.S. Cl. 269—107 **57 Claims**



An adjustable clamping means for use in clamping any one of a plurality of objects having different cross-sectional sizes and/or shapes. The clamp may be used for holding a tube such as in a tube flaring tool. The clamping portions of the clamp provide a positive retention of the workpiece while yet effectively precluding deformation of the workpiece as by overstressing thereof in effectively holding the workpiece. The clamp includes interleaved, intersliding portions cooperatively defining an array of clamping surfaces adjustably spaced from the axis of an inner clamping space in which the workpiece is retained. Manual means are provided for adjusting the clamping surface array so that the tool may be used with different diameter cylindrical, polygonal, irregular, etc., workpieces. The clamp may include means for preventing overtorqueing thereof illustratively in the form of a spring biased clutch. The manual operating means may alternatively be separable from the clamping elements or connected thereto as desired. In one form, the clamp comprises a chuck for use in holding a workpiece such as in a lathe or the like, in a centered relationship to an axis of the clamp.

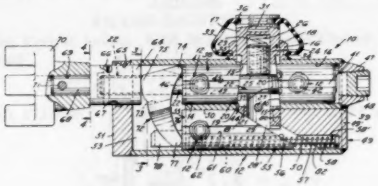
3,829,078

MANUALLY OPERATED SPRING LOADED JACK LOCK ASSEMBLY

Dean A. Claycomb, 3921 W. Townhall Rd., Traverse City, Mich. 49684

Filed Aug. 10, 1973, Ser. No. 387,482
Int. Cl. B23q *3/10*
U.S. Cl. 269—310 **12 Claims**

A spring-biased plunger, preferably if not always assisted by fixed jacks, supports a workpiece to be mechanically operated on forcibly by a metalworking or like machine. The plunger is spring-urged upwardly, then supported in an upwardly adjusted position by clamping elements of a clamp device which are actuated toward one another in opposite horizontal



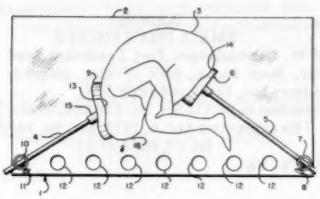
directions by manually operated screw means. As thus clamped in a positive preliminary way, a wedge device, as coordinately operated through a toggle type member in synchronism with the clamp device, comes into action beneath the plunger to rigidly sustain the same.

3,829,079

SPINAL POSITION PATIENT RESTRAINT

Donald H. Fox, 418 Woodhaven Pl., Philadelphia, Pa. 19116

Filed Jan. 26, 1973, Ser. No. 326,764
Int. Cl. A61g *13/00*
U.S. Cl. 269—328 **10 Claims**



A medical restraint device whereby a patient lying on his side on a medical treatment table, in a curled position with bowed spine, is prevented from involuntarily or inadvertently kicking, straightening the spine, or otherwise making a movement potentially dangerous to the spine. A cervical-occipital pad and a posterior-thigh pad are provided to bear against these general anatomical portions of the patient. Each pad is individually mounted for vertical, horizontal, and pivotal adjustment so as to be capable of being brought to the correct position with respect to the patient. Selectively adjustable fixing or locking means are provided. Various mechanical expedients, including sliding, or telescoping, or threaded connections to carry out these functions are provided.

3,829,080

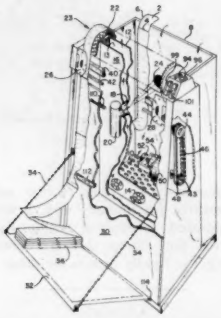
FAN-FOLDED PAPER STACKER FOR HIGH SPEED PRINTER

H. Peter Braen, Amherst, N.H., and Raymond A. Hafner, West Acton, Mass., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Continuation of Ser. No. 158,195, June 30, 1971, abandoned. This application Aug. 19, 1971, Ser. No. 173,213
Int. Cl. B65h *45/04*
U.S. Cl. 270—61 F **20 Claims**

Fan-folded printout from a high speed printer is stacked by feeding the paper down a vertically inclined surface onto a platform located at an angle with the surface to cause the paper to stack. The paper is fed down the vertically inclined

surface by a pair of conventional paper feed tractors engaging edge perforations in the paper. A vacuum chamber buffer is provided between the printer and the inclined surface and when a minimum amount of web is photoelectrically sensed in the buffer, the stacker is conditioned to discontinue stacking when the first fold pointing away from the inclined surface

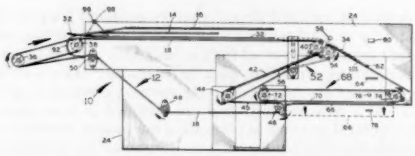


above the top of the stacked paper on the platform is one form length above the top of the stack. The precise time at which to discontinue stacking is determined by tracking the shaft driving the tractors with a counter. Since the top of the stack continually rises, another counter is provided to track the stack's top.

3,829,081
SMALL PIECE FOLDER

Roland W. Gerstenberger, Fort Lauderdale, and Charles P. Heater, Boca Raton, both of Fla., assignors to Jensen Machinery Inc., Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 128,007, March 25, 1971. This application Apr. 6, 1973, Ser. No. 348,620
Int. Cl. B65h *45/22*
U.S. Cl. 270—66 **9 Claims**



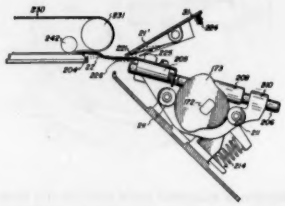
A laundry folding apparatus having folding members which are laterally adjustable to accommodate different fold widths, as determined by guides over which the opposite side portions of a laundry piece are folded and which are themselves laterally adjustable by turning a single rod. After being longitudinally folded, each laundry piece is cross folded by being forced pneumatically between downwardly inclined, face-to-face portions of conveyors. Preferably, the fully folded pieces are carried by a return conveyor back to the entrance end of the apparatus.

3,829,082
AUTOMATIC DOCUMENT HANDLER

August Hoyer, 67 Pineview, Penfield, N.Y. 14526

Filed May 8, 1972, Ser. No. 251,492
Int. Cl. B65h *5/02*
U.S. Cl. 271—4 **2 Claims**

An automatic document handler for supplying documents singly to the platen of a processing apparatus such as a copying machine. Following copying, each document is returned to the document supply where the used documents are kept separated from documents awaiting copying by means of a resettable bail bar. To position the documents properly for copying, the document handler includes a register against which the document trailing edge is abutted through reversal of the platen transport belt. To allow the document to be removed and the platen cleared for the next document, means

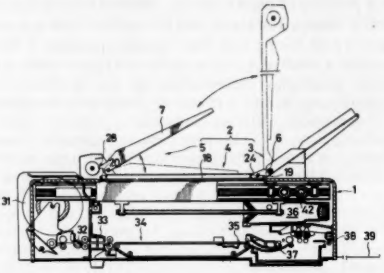


are provided to remove the register and lower a document deflector into an intercept position, the deflector then serving to guide the document into a predetermined return path back to the document supply without interfering with movement of the next document foward. The platen transport comprises an endless belt conveyor supported for substantially single line contact with the platen surface at a point adjacent to and parallel with the register.

3,829,083
AUTOMATIC ORIGINAL FEED DEVICE FOR ELECTROPHOTOGRAPHIC DUPLICATING MACHINE

Toshio Shiina, No. 20-6, Nakamagome 3-chome, Ota-ku, Tokyo, and Akira Midorikawa, No. 3-27-201, Yokodai 2-chome, Isogo-ku, Yokohama, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Nov. 9, 1972, Ser. No. 304,979
Claims priority, application Japan, Nov. 13, 1971, 46-90301
Int. Cl. B65h *3/06, 5/02, 31/02*
U.S. Cl. 271—4 **6 Claims**



An automatic original feed attachment for mounting on conventional electrophotographic duplicating machines comprising: a first section which is connected to the machine having a tray for holding a stack of originals to be duplicated and a feed system for removing the originals in sequence from the tray; a second section pivoted to the first section and having an endless belt which passes over the copying position of the machine and feeds originals from the first section to the copying position and holds them there during copying; and a third section connected to the second section and having an original receiving tray and a system for removing originals after copying and reversing their feed path before delivery to the receiving tray. The receiving tray mounting permits it to be dropped from its normally inclined position to rest on the second sec-

tion and the second section may be pivoted up from the copying position to permit free access to the original receiving glass plate for individual copying when the present attachment is not being used.

3,829,084

ADJUSTABLE TRANSFER GRIPPER CYLINDER

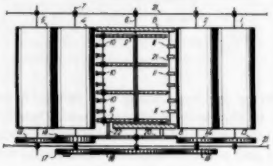
Josef Jurny, Sebranice, Czechoslovakia, assignor to Adamovske Strojirny, narodni podnik, Adamov, Czechoslovakia

Filed July 10, 1972, Ser. No. 270,451

Claims priority, application Czechoslovakia, July 13, 1971, 5139-71

Int. Cl. B65h *5/12*

U.S. Cl. 271—277 **7 Claims**



Adjustment mechanism for properly gripping paper sheets of different lengths to be transferred for multicolor printing including adjusting means for adjusting the circumferential spacing of cylinder gripping means, particularly on rotary printing machines. On one end of a shaft of a sheet transfer cylinder there is rotatably mounted a gear wheel and on one end of a shaft of a cylinder for turning papers sheets is a first drive gear and a second drive gear which is adjustable relatively to the first drive gear. One drive gear of the turning cylinder is engageable with the drive gear of the sheet transfer cylinder, so that changing of the rotational orientation between the drive gears of the sheet turning cylinder effects a rotation of the gear wheel of the sheet transfer cylinder and a change in the circumferential spacing between the mechanical grippers and the suction gripping elements thereof.

3,829,085

SHEET FEEDING APPARATUS

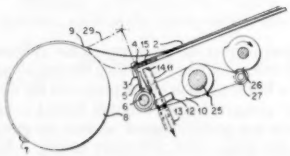
Willi Jeschke, and Gerhard Pollich, both of Heidelberg, Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed July 12, 1972, Ser. No. 271,066

Claims priority, application Germany, July 13, 1971, 2134834

Int. Cl. B65h *9/04, 9/14*

U.S. Cl. 271—231 **7 Claims**



Apparatus for feeding sheets includes a feed table onto which the sheets are supplied. The front edges of the sheet are engaged by stops, and suction openings in the feed table precede the stops. Suction conduit means which underlie the feed table in alignment with the suction opeings are operable between raised and lowered positions in sychronism with the operation of the apparatus whereby the underpressure applied to a sheet through the suction openings and suction conduit to hold down the sheet on the feed table is varied in synchronism with the operation of the apparatus as the feed conduit means is raised and lowered.

3,829,086

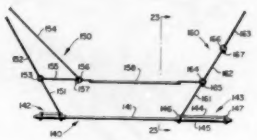
FIGURE-EIGHT SWING

Marion Pasteur Lelong, 1308 Seaton Ln., Falls Church, Va. 22046

Filed July 8, 1971, Ser. No. 160,727

Int. Cl. A63g *9/00*

U.S. Cl. 272—85 **19 Claims**



A swing for two persons seated or standing at opposing and spaced-apart spreader assemblies which are interconnected by a transversely disposed and rotatably attached spacer shaft means that may be monoshaft or multishaft. A pair of ropes diverge downwardly from an overhead pivot to spaced-apart attachment positions on either side of each spreader assembly. Relative to the spacer shaft means, the support lines may be inwardly inclined, upright, or outwardly inclined. The swing travels endwise and sidewise and is capable of describing an apparent figure-eight pattern when the spreader assemblies move transpositionally. Means are provided for users to initiate endwise and sidewise swinging and for group activity.

3,829,087

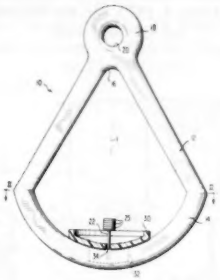
WHIRL-ABOUT TOY

George Clark Kuney, 811 B Seventeenth St. N., St. Petersburg, Fla. 33704

Filed June 23, 1972, Ser. No. 265,510

Int. Cl. A63h *1/32*

U.S. Cl. 273—1 R **9 Claims**



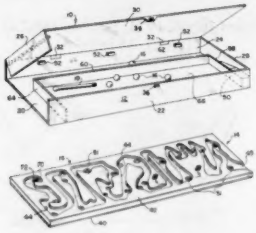
A toy which includes a frame member having a suspension point at one end thereof and a balance point at the other end thereof facing said suspension point with the balance point, suspension point and center of gravity of the frame member falling on a common straight line so that objects can be balanced on the balance point and the frame member can be spun about the suspension point without upsetting the balanced condition of the objects. A rod of small diameter is supported on the frame member so as to extend the balance point along the common straight line toward the suspension point. The rod has its end face lying in a plane perpendicular to the common straight line and a cup-shape member is disposed on the frame member in surrounding relationship to the rod.

3,829,088

COMBINATION GAME AND EDUCATIONAL DEVICE

Clark J. Pahlas, Wheaton, Ill., assignor to The A. N. Palmer Company, Schaumburg, Ill.

Filed Aug. 31, 1972, Ser. No. 285,444
Int. Cl. A63f *7/06*; **G09b** *11/04*
U.S. Cl. 273—1 M **2 Claims**



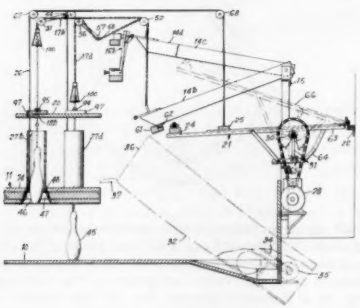
An educational magnetic game device wherein a steel or other magnetic ball is caused to traverse an undulatory channel-like track under the influence of a magnetized stylus. Appropriately positioned holes in the channel track bottom constitute obstacles to continuous movement of the ball along the track. The game device is embodied in a box having a non-magnetic transparent hinged lid through which the track may be viewed and the ball magnetically attracted while the interior of the box affords a storage space for a selection of different tracks. A guide channel within the box receives a ball which has successfully traversed the track and returns it to the player. Such balls as are entrapped by the obstacle holes are captured within the box. The various tracks define contours which may familiarize the player or players with specific shapes such, for example, as letter or numeral shapes, or merely with penmanship strokes which are used in executing such shapes.

3,829,089

TETHERED PINS PINSETTER

Louis M. Butterfield, Portsmouth Ave., Stratham, N.H. 03885

Filed Nov. 9, 1973, Ser. No. 414,388
Int. Cl. A63d *3/00*
U.S. Cl. 273—44 **10 Claims**



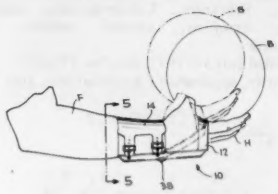
A Pinsetter for bowling alleys in which the pins are connected to the pinsetting mechanism by overhead lines, the lines having idle loops to permit the pins substantial range of movement upon being struck. A ball return mechanism coacts with the pinsetter to provide automatic actuation of the pinsetting mechanism under the correct predetermined conditions.

3,829,090

ADJUSTABLE WRIST SUPPORT FOR BOWLING

William H. Ensinger, Rt. 1, Bombay, N.Y. 12914

Filed Aug. 16, 1973, Ser. No. 388,778
Int. Cl. A63b *71/14*
U.S. Cl. 273—54 B **4 Claims**



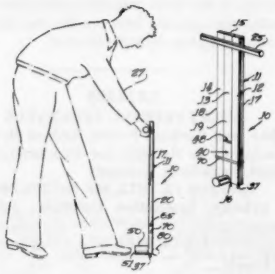
A strap device for supporting the bowler's wrist in any desired angle to the back of his hand while bowling includes an elongated strip of flexible material strapped about both the bowler's hand and wrist on opposite sides of the wrist joint. A lever arrangement is provided for tightening the wrist strap in place. A resilient plate assembly is secured along the length of the strip for transversely bending the strap device at the wrist joint and over lapping ends of the plate are capable of being selectively clamped in place at any desired angle.

3,829,091

KICK PUTT DEVICE

Frank Conrad, 11 F Birchwood Dr., Forestville, Conn. 06010

Filed June 18, 1973, Ser. No. 371,176
Int. Cl. A63b *59/00*
U.S. Cl. 273—67 R **6 Claims**



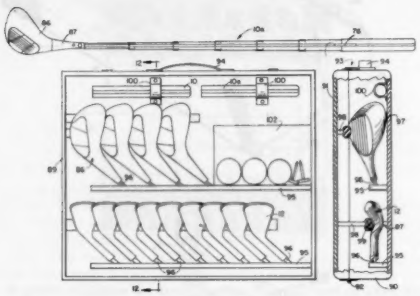
A kick putt playing device intended for utilization with a regular golf ball or the like for putting the ball along a playing surface by a kicking action of the player on the device which includes an elongated shaft member having a handle connected to the top portion thereof adapted for grasping in the hands of the player with the shaft having a ball striking member pivotally connected at the bottom end thereof in a manner for a player to position the bottom end of the shaft immediately behind the golf ball and aligned with the direction of desired travel for the golf ball such that by a kicking type motion of the back of the striking member it will pivot forwardly of the shaft in a manner to strike and propell the golf ball in the desired direction, after which a resilient rubber band connected between the shaft and the striking member returns the striking member to the initial position ready for further usage by the player.

3,829,092

SET OF GOLF CLUBS AND MEANS FOR CARRYING SAME

Theodore E. Arkin, 3200 N. Lake Shore Dr., Chicago, Ill. 62221

Filed July 5, 1972, Ser. No. 269,263
Int. Cl. A63b 55/00
U.S. Cl. 273—77 A 5 Claims



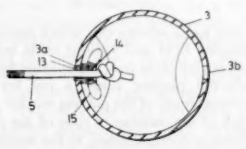
In combination, a portable container with a plurality of different golf club heads with each of the heads having a shank portion, said plurality of different golf club heads all removably supported in said portable container, means in the container such as pegs or the like for removably and spacedly supporting the heads whereby said heads are each independently removable from the container, and a shaft formed of a plurality of telescoping sections adapted when in extended position to form a shaft for each of the golf club heads, the shaft having an innermost section, an intermediate section and an outermost section, which outermost section forms the handle of said shaft, each of the shanks of the golf club heads having means which cooperate with the innermost section of the shaft for detachably locking said shaft to any one of said heads for using same as a conventional golf club, the said telescoping sections when detached from any of said heads to be telescoped so that all of the telescoped sections are collapsed to a relatively short length to be readily supported in the portable container, means in the container for retaining the telescoped sections in said container, said single shaft and plurality of different detachable heads forming the equivalent of a complete set of different golf clubs which are transportable in the relatively small container.

3,829,093

TETHERED BALL APPARATUS

Aubrey Leon Abrams, Johannesburg, South Africa, assignor to General Stationery Supplies (Proprietary) Limited, Johannesburg, South Africa

Filed Jan. 3, 1972, Ser. No. 214,876
Claims priority, application South Africa, Jan. 15, 1971, 71/0246
Int. Cl. A63b 71/02
U.S. Cl. 273—95 A 2 Claims



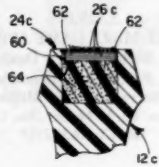
The apparatus of the invention comprises a tube which can be inserted into the ground and carries a co-axial bolt. A nut is threaded on to the bolt. Attached to the nut is one end of a cord which is connected to a ball. The apparatus is used by striking the ball with a bat or the like until the nut has been rotated in one direction sufficiently for it to have travelled to one end of the bolt.

3,829,094

DART HAVING MULTIPLE DETACHABLE TIPS

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356; Delmar K. Everitt, Woodland Hills, Calif., and Ronald F. Chesley, La Crescenta, Calif.

Filed Dec. 19, 1972, Ser. No. 316,496
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R 11 Claims



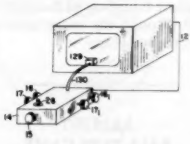
A dart for use with a target to play a game. The darts have detachable tips in the form of markers which adhere to the target on impact; the dart then separates from the marker, leaving the marker secured to the target to precisely indicate where the dart had made its hit on the target. The marker may have a strong adhesive means such as "Velcro" hooks on its front surface which will adhere to the target surface when the dart strikes the target. The surface of the target could be particularly adapted to adhere to the marker. Individual darts could also be used as play devices which would attach their markers to various cloth or fabric surfaces against which the dart was thrown.

3,829,095

METHOD OF EMPLOYING A TELEVISION RECEIVER FOR ACTIVE PARTICIPATION

Ralph H. Baer, Manchester, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

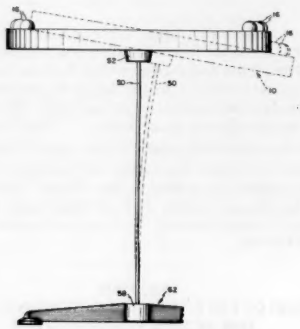
Division of Ser. No. 697,798, Jan. 15, 1968, abandoned. This application Aug. 10, 1970, Ser. No. 62,691
Int. Cl. F41j 16/08
U.S. Cl. 273—101.1 6 Claims



The present invention pertains to an apparatus and method, in conjunction with standard monochrome and color television receivers, for the generation, display, manipulation, and use of symbols or geometric figures upon the screen of the television receivers for the purpose of training simulation, for playing games, and for engaging in other activities by one or more participants. The invention comprises in one embodiment a control unit, connecting elements and in some applications a television screen overlay mask utilized in conjunction with a standard television receiver. The control 10 unit includes the control, switches and electronic circuitry for the generation, manipulation and control of video signals which

are to be displayed on the television screen. The connecting elements couple the video signals to the receiver antenna terminals thereby using existing electronic circuits within the receiver to process and display the signals. An overlay mask which may be removably attached to the television screen may determine the nature of the game to be played or the training simulated. Control units are provided for each of the participants. In the present invention dots are generated on a television screen and controls are provided to cause one dot to overlap the other. Alternatively, a photoelectric element senses light emitted by a displayed dot and denotes that the light has been sensed.

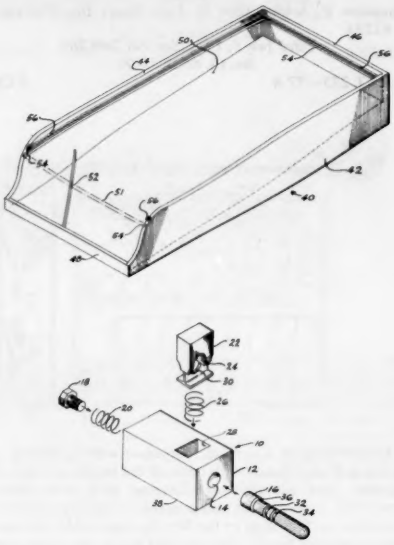
3,829,096
BALANCED MAZE GAME APPARATUS
Louis M. Gioia, 14 Berkshire Dr., Danbury, Conn. 06810; Charles Ellsworth, P.O. Box 36, Brookfield Ctr., Conn., and James L. Webb, 3 Surrey Ln., New Milford, Conn. 06776
Filed Apr. 19, 1971, Ser. No. 134,970
Int. Cl. A63f *7/16*
U.S. Cl. 273—110 **8 Claims**



A game board is supported on a flexible rod and associated base. Upstanding flanges define a maze path on the game board surface through which a ball may roll. A plurality of depressions are provided about the periphery of the game board, and weights removably positioned in these depressions adjustably tip the game board on its flexible rod support, causing the ball to roll through the maze path responsive to the selected position of the weights.

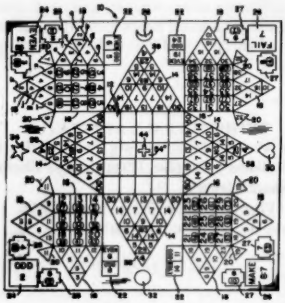
3,829,097
BALL TYPE GAME
August Rohrmuller, 198-40 32 Ave., Flushing, N.Y. 11358
Filed July 5, 1972, Ser. No. 269,033
Int. Cl. A63b *3/02*
U.S. Cl. 273—125 R **1 Claim**

A portable game embodying a frame into which is slidingly received one of a plurality of different game boards the upper surface of which forms the game area on which balls are projected to desired locations by means of a portable self-contained spring operated shooting device. The balls eventually fall from the game board onto an inclined return platform for return to a desired location. The shooting device includes a housing having a flat base, a plunger received in a bore provided in the housing and a spring positioned in the bore for urging the plunger forward in the bore. The shooting device is also provided with a spring biased operating device positioned within a second bore in the housing, the second bore being



perpendicular to the first mentioned bore. The plunger is provided with a plurality of operating device receiving recesses for retaining the plunger in a plurality of cocked positions.

3,829,098
BOARD GAME APPARATUS
Frederick W. Umminger, Jr., 11109 Walnut Creek Dr., Parkville, Mo. 55102
Filed Feb. 5, 1973, Ser. No. 329,741
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 AB **32 Claims**

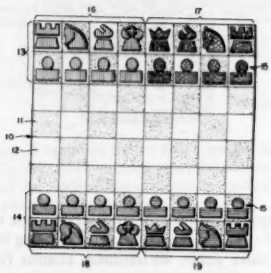


A game and game accessories which include a game board having a playing field and various odds indicating sections, playing markers movable over the playing field in accordance with preselected playing rules, a die for controlling the direction of movement of the playing marker, a roll marker for keeping track of the number of rolls of the die, consecutively numbered tablets corresponding to the number of die rolls up to a preselected maximum and supplemental odds cards for indicating the approximate odds of playing markers exiting the playing field on different moves and at various positions or combinations of positions.

3,829,099
FOUR PLAYER CHESS GAME APPARATUS

Ronald Ray Lucero, 1307 Monterey Anaheim, Anaheim, Calif. 92801

Filed Feb. 8, 1973, Ser. No. 330,676
Int. Cl. A63f 3/02
U.S. Cl. 273—131 KC 3 Claims

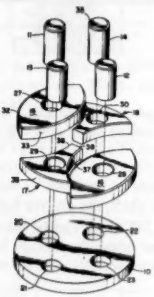


A game of chess for four players has two sets of chessmen each of which is divided into two half-sets with the four half-sets having different colors thereon, one half-set consisting of a king, a bishop, a knight, a rook, and four pawns, and the other half-set consisting of a queen, a bishop, a knight, a rook, and four pawns. The game is played on a conventional chessboard and each player controls a half-set with the two players having the half-sets of one chess set forming a team. There is also disclosed a checker game consisting of a conventional checker board and four sets of checkers, the sets being of different colors and each consisting of six checkers.

3,829,100
EDUCATION PUZZLE

Lloyd A. Nielsen, 4441 South Ave., West, Missoula, Mont. 59801

Filed Mar. 30, 1973, Ser. No. 346,565
Int. Cl. A63f 9/12
U.S. Cl. 273—157 R 10 Claims

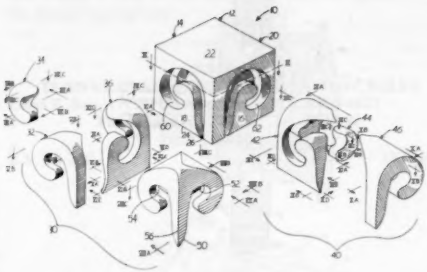


An educational puzzle in which there are a base member having a plurality of recesses therein, a corresponding number of pegs, each of a different color, and a corresponding number of blocks, each of the same color as one of said pegs. The blocks, when properly assembled, form a continuous layer of the same outline and size as the base member, so as to cover the base member. Preferably, the base member is circular and the pieces have largely arcuate edge walls. In assembly, the child places the pegs in the recesses in the base member and then places over each peg a block of the same color as the peg over which the block is placed, adjusting the angular position of the block until its fits snugly against the contiguous block or blocks.

3,829,101
PUZZLE ASSEMBLY WITH INTERSECTING PIECES

Louis F. Betzoldt, Taylor, Mich., assignor to Lance A. Neibauer, Wayne, Mich.

Filed June 20, 1973, Ser. No. 371,931
Int. Cl. A63f 9/12
U.S. Cl. 273—160 8 Claims

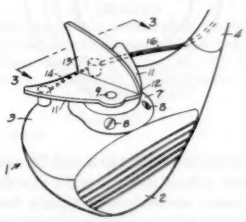


A puzzle formed from a block including several variously configured, interlocking unitary pieces which are slideable into and out of the block for assembly and disassembly. The pieces assemble into two intersecting cylinders within the block including a central piece which forms a part of both cylinders. The preferred method of forming the puzzle comprises cutting the cylinders by causing the instrument used for cutting to enter and exit the block along a single line for each cylinder.

3,829,102
GOLF SWING TRAINING DEVICE

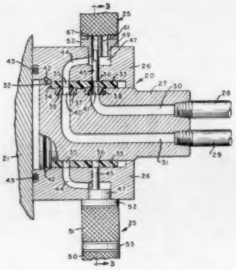
John G. Harrison, 770 W. K. St., Benicia, Calif. 94510

Filed Aug. 20, 1973, Ser. No. 389,953
Int. Cl. A63b 69/36
U.S. Cl. 273—186 A 7 Claims



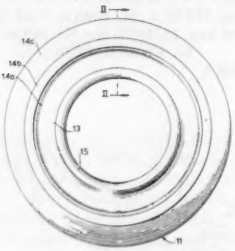
This is an improvement on training attachments on the head of a golf club. The training attachment includes a directing member attachable to the top of the head of the golf club so that it can be turned and held in selected directions relatively to the face of the club; a remote control device is actuated from the grip portion of the shaft of the golf club; in one form the actuation is through a line extending along the shaft of the golf club to the directing member and a device near the grip whereby the line is manipulated for turning the directing member; in another form the directing member has an electrical device including electro-magnets for turning the same, which electrical device is actuated through a switch on or near the grip portion of the shaft of the golf club.

3,829,103
SEAL STRUCTURE
Ernst Sussman, 634 Stefko Blvd., Bethlehem, Pa. 18016
Division of Ser. No. 151,065, June 8, 1971, Pat. No. 3,726,363.
This application Sept. 22, 1972, Ser. No. 291,381
Int. Cl. F16k *11/02, 31/53*
U.S. Cl. 277—74 **1 Claim**



A coolant spider assembly that serves to selectively feed coolant to the spindles of a turret type drilling machine, and wherein there is provided a valve means for controlling the flow of coolant, and wherein there is also provided a sealing arrangement for the spider assembly.

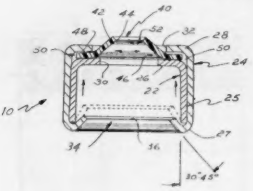
3,829,104
ANNULAR SEAL
Martin Green, 204 Marshall Lake Rd., Solihull, England
Filed Mar. 20, 1972, Ser. No. 236,314
Int. Cl. F16j *9/00, 15/00*
U.S. Cl. 277—29 **3 Claims**



The present invention relates to a seal, for sealing an annular space between a fixed member and a movable member in the master cylinder assembly of a vehicle braking system, comprising an annular body of resilient material defining one substantially plane end face, two substantially axially extending surfaces intended to form sealing surfaces, and an annular wall protruding axially from the other end face, and beyond the two said surfaces.

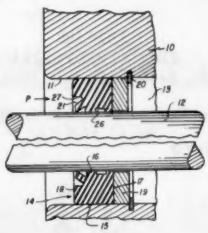
3,829,105
DOUBLE CUP SEAL
James A. Kammeraad, Holland, Mich., assignor to K-Line Industries, Inc., Holland, Mich.
Filed Oct. 25, 1972, Ser. No. 300,759
Int. Cl. F16j *15/32;* **F16k** *41/00*
U.S. Cl. 277—183 **16 Claims**

A valve seal assembly for sealing the valve stem of a valve reciprocally mounted in a valve guide of an internal combustion engine, the valve guide including an extending shoulder portion. Upon installation, the seal assembly automatically accommodates any eccentricities due to the location of the valve stem in the shoulder portion. The assembly includes inner and outer cup members retaining a laterally movable, self-adjusting, frusto-conical Teflon sealing member



in sealing engagement with the valve stem. When the assembly is telescoped over the valve stem and extending shoulder portion of the valve guide, an inturned, annular flange on the outer cup is permanently deformed causing an axial shift of the inner cup which engages and locks the sealing member in its aligned position with the valve stem.

3,829,106
HIGH PRESSURE LIP SEAL
Edward A. Wheelock, Lake Zurich, Ill., assignor to Crane Packing Company, Morton Grove, Ill.
Filed Dec. 4, 1972, Ser. No. 311,853
Int. Cl. F16j *15/32*
U.S. Cl. 277—205 **6 Claims**

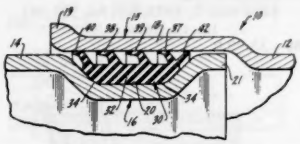


The invention disclosed is a simple elastomeric ring used as a seal between a rotating shaft and a housing, said shaft and housing forming parts of a high pressure hydraulic system. The ring is shaped to have a flexible lip exposed to the fluid under pressure and held against the shaft by said fluid, and to form a groove adjacent the shaft, the groove being filled with a lubricant. Pressure to 2,500 p.s.i. can be taken by the ring so that the ring can in some instances replace high cost end face rotary mechanical seals normally used for such pressures.

3,829,107
PIPE JOINT
Mark A. Machado, Santa Rosa, and James F. Forchini, Healdsburg, both of Calif., assignors to Ecodyne Corporation, Chicago, Ill.
Filed Jan. 18, 1973, Ser. No. 315,044
Int. Cl. F16j *15/00;* **F16k** *41/00*
U.S. Cl. 277—207 **3 Claims**

A pipe joint including a first pipe having an enlarged hub portion and a second pipe having one of its ends telescopically received in the hub portion of the first pipe. A sealing gasket confined within a circumferential recess in the received end of the second pipe. The sealing gasket has a cross defining a plurality of radially extending labyrinth type fingers. A leading

finger means formed integral with one of the labyrinth fingers, extends substantially axially outward from the gasket. The labyrinth fingers have an internal diameter greater than the internal diameter of the hub portion of the first pipe such that as



the second pipe is received by the first pipe the labyrinth fingers are axially deformed causing a partial seal at each finger and rotation of the leading finger means towards a radial position so as to result in a double lip seal.

3,829,108

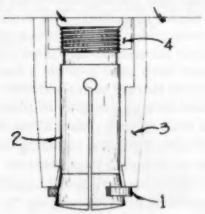
COLLET-TRUING DEVICE

Bruno J. Zapart, Rt. 2, Box 161, Doniphan, Mo. 63935

Filed June 29, 1972, Ser. No. 267,533

Int. Cl. B23b *31/20*

U.S. Cl. 279—1 L **2 Claims**



The invention relates to a ring which is interposed between a collet and a chuck housing to permit the alignment of the collet along the longitudinal axis of the chuck.

3,829,109

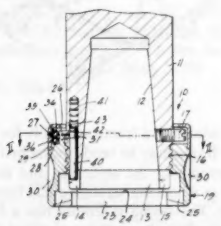
TOOL HOLDER WITH SPRING OPERATED NUT

Roland G. Koch, Frankenmuth, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed May 2, 1972, Ser. No. 249,722

Int. Cl. B23b *31/06*

U.S. Cl. 279—91 **19 Claims**



A tool holder assembly includes a hollow supporting member on which there is threaded a locking ring which is urged to its locked position by a pair of parallel equal springs, there being a combined latch and release pin wherein the release pin is directly guided in the supporting member for holding the locking ring in the unlocked position, and responsive to the reception of a tool to be automatically released for automatically tightening the locking ring. The locking springs are disposed in groove means defined by structure which is comovable with the locking ring, the groove being radially outwardly and axially substantially open, and closed by an annular cover of L-shaped cross section telescopically received on the locking ring. The locking ring has a cylindrical flange with a cutout portion defining angularly spaced abutments that engage a stop on the supporting member against which the parallel springs act.

3,829,110

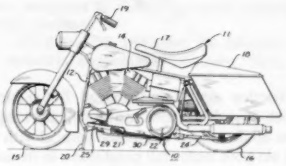
TURN-LEAN RESTRICTER FOR MOTORCYCLES

Louis Z. Ray, 1712 79th Ave., Oakland, Calif. 94621

Filed May 10, 1973, Ser. No. 359,106

Int. Cl. B62b *19/00*

U.S. Cl. 280—8 **10 Claims**



A turn-lean restricter mounted upon a motorcycle having a frame and a chain casing defining an oil reservoir connected with the motorcycle engine and through which engine lubricant flows. The restricter has an elongated plate generally underlying the chain casing and particularly the outer lower corner portion thereof. Front and rear fastener structures secured to the plate respectively adjacent the front and rear end portions thereof are secured directly or indirectly to the frame and support the plate at an angular inclination in which it angles inwardly and downwardly. The rear fastener structure is fixedly secured to the frame, and the front fastener structure is pivotally related thereto, thereby enabling the plate to twist and deflect in generally vertical directions upon ground-engaging impact.

3,829,111

SKATES

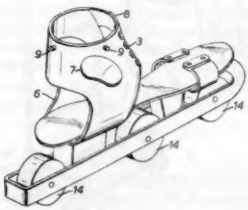
Bryan Frederick Nicholls, Northampton, England, assignor to The Meltoy Company Limited, Northampton, England

Filed Nov. 20, 1972, Ser. No. 307,875

Claims priority, application Great Britain, Oct. 26, 1972, 49390/72

Int. Cl. A63c *1/18*

U.S. Cl. 280—11.3 **2 Claims**



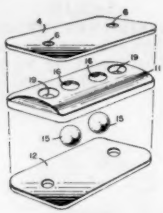
A skating boot has separate ankle and toe straps, each attached to a roller or blade carrying chassis, both straps being formed as one-piece mouldings of flexible synthetic resin material. The straps are locally reinforced by thickening of the

material at selected location, such as in the region of lace holes and attachment holes, and locally reduced in thickness where increased flexibility is desired such as at the edges of ankle cut-outs and tongues.

3,829,112
ANTIFRICTION DEVICE

Richard G. Spademan, 933 Addison Ave., Palo Alto, Calif. 94301

Filed Feb. 17, 1972, Ser. No. 227,119
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 C **8 Claims**

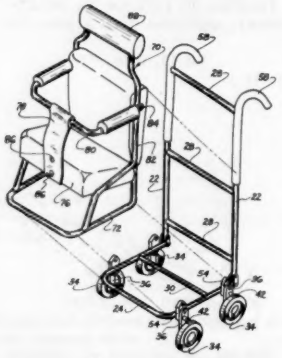


An antifriction device is provided for reducing friction forces which impede relative movement between a ski boot and a ski in all directions in a plane parallel with the toe portion of the ski boot under fall conditions. In its simplest form, the device comprises a plate on which is fixedly mounted and retained one or more arcuate members. A portion of the arcuate surface of the members is adapted to make contact with the toe portion of the ski boot or a plane rigid plate mounted to the toe portion of the ski boot. In a further embodiment of the device, a hollow housing is provided and adapted to retain a member having an arcuate surface such as a ball bearing which is free to rotate within the housing and which projects through an aperture in the housing to make contact with the toe of the ski boot or the plate. The housing is further provided with a cavity to receive lubricant for lubricating the retained member.

3,829,113
ADAPTER FOR CONVERTIBLE CAR SEAT AND STROLLER

Quido C. Epelbaum, 5472 Walshire Dr., Columbus, Ohio 43227

Filed Oct. 27, 1972, Ser. No. 301,306
Int. Cl. B62b *1/04*
U.S. Cl. 280—30 **7 Claims**

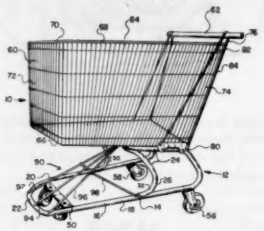


A convertible child car seat and stroller apparatus adapted to easily and simply convert most presently available types of child car seats into a stroller assembly and back to a car seat as described with a minimum of effort.

3,829,114
SHOPPING CART WITH ARTICLE STORAGE PREVENTING MEANS UNDER BASKET

Harold Cohen, Scotch Plains, and William L. Noto, Maplewood, both of N.J., assignors to Shop-Rite Supermarkets, Inc., Elizabeth, N.J.

Filed Mar. 2, 1973, Ser. No. 337,382
Int. Cl. B62b *11/00*
U.S. Cl. 280—33.99 R **14 Claims**

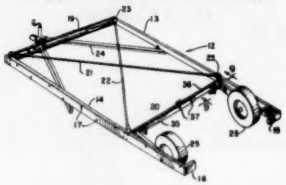


An improved nestable shopping cart is provided which includes a frame assembly upon which a basket is supported and includes means for obstructing the area under the basket so that it is substantially impossible to carry groceries, other articles, shopping bags and the like below the basket and out of view from the check-out cashier. The obstructing means for obstructing the area under the basket comprises a plurality of elongated members secured to the frame assembly below the basket in a manner such as to provide a barrier which blocks off and thus prevents storage of such articles in the area below the basket and also forms a plurality of planes skewed in such a manner so that none of such planes alone or in any combination is capable of supporting and retaining the usual supermarket merchandise or shopping bags thereon. Furthermore, the above described shopping cart is still capable of nesting with other similar type carts notwithstanding the presence of such obstructing means.

3,829,115
FRAME ASSEMBLY FOR MOBILE STRUCTURES

Scott Rayfield Rich, Rt. 1, Carmichaels, Pa. 15320

Continuation of Ser. No. 35,764, May 8, 1970, abandoned. This application Aug. 24, 1972, Ser. No. 283,269
Int. Cl. B62d *21/14*
U.S. Cl. 280—34 A **16 Claims**



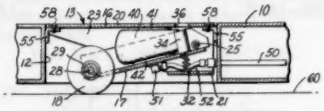
This invention relates to a frame assembly for mobile structures wherein the frame may be readily attached to the mobile structure for transporting the structure and may be readily removed therefrom when the structure has been transported to its destination. The frame assembly has a first, extended position for transporting the mobile structure and a second, collapsed position for transporting the frame assembly when it is removed from the mobile structure. The frame assembly includes a unique suspension assembly which may be pivoted into and out of operative position on a supporting surface on which the structure is being transported or may be removed from the frame assembly.

3,829,116

RETRACTABLE GUIDE MECHANISM

Robert E. Burdick, Santa Barbara, Calif., assignor to Rolair Systems, Inc., Santa Barbara, Calif.

Filed Oct. 24, 1972, Ser. No. 300,186
Int. Cl. B60v 1/00; B62d 61/12
U.S. Cl. 280—43.23 2 Claims



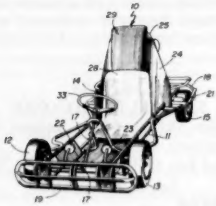
A retractable guide wheel mechanism for an air cushion transporter and suitable for mounting within or at the edge of the transporter platform. A housing with pivoted frame carrying the guide wheel, with a spring for urging the wheel upward and an air unit for urging the wheel downward into engagement with the ground surface.

3,829,117

ENGINE DRIVEN CART

Alexander C. Park, Monument Beach, Mass., assignor to A & C Park Incorporated, Monument Beach, Mass.

Filed May 24, 1972, Ser. No. 256,369
Int. Cl. B60p
U.S. Cl. 280—96.1 4 Claims



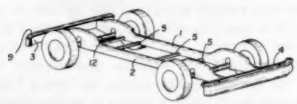
A cart for amusement purposes having an elongated chassis at the ends of which are located pairs of wheel assemblies, there being an engine mounted on the chassis for driving one of the pair of wheel assemblies.

3,829,118

COMBINED VEHICLE CHASSIS AND AIR SUSPENSION SYSTEM

Rene Gouirand, New York, N.Y., assignor to Joseph Mercadante, Greenwich, Conn.

Division of Ser. No. 284,031, Aug. 28, 1972, which is a division of Ser. No. 110,703, Jan. 28, 1971, Pat. No. 3,689,054. This application June 25, 1973, Ser. No. 372,984
Int. Cl. B60g 15/08
U.S. Cl. 280—106.5 R 11 Claims



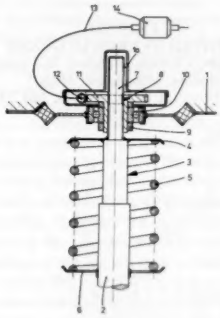
A combined vehicle chassis and air suspension wherein elongated air bags having a substantially circular cross-section are physically located within and supported by inverted, U-shaped chassis members. Under no load conditions, the air bags contact the chassis members on only a portion of the circumference and as the load increases, the contact surface between the air bag and the chassis members increases, thereby increasing spring stiffness. The side portions of the inverted U-shaped chassis members are spaced from the sides of the air bags under no load conditions. Under heavy load and when the car turns around a curve, the side portions of the U-shaped members prevent side-sway of the vehicle. Air-bumpers are provided which are coupled to the air system of the suspension system. The air in the air-bumpers acts as an additional reservoir for the air bags of the suspension system to effectively soften the ride of the vehicle and additionally, absorb vehicle impacts.

3,829,119

APPARATUS FOR STATIC LEVEL REGULATION OF A VEHICLE

Peter Kirschner, and Heinz Gunter Rauer, both of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft Wolfsburg, Germany

Filed Aug. 30, 1972, Ser. No. 285,082
Claims priority, application Germany, Sept. 18, 1971, 2146723
Int. Cl. B60g 17/00
U.S. Cl. 280—124 F 10 Claims



The static level of vehicles having a spring arrangement between the body and axle is regulated by controlling a threaded adjustment device in a manner that, despite variations in the compression of the spring arrangement due to static loading of the vehicle, the distance between the axle and the body of the vehicle remains constant. A threaded shaft mates with a threaded receiving part, one being rotatable and mounted on a part of the vehicle while the other is non-rotatable and mounted to contact an end of the spring arrangement. Rotating motion is imparted to the rotatable part in response to static load variations which causes a variation in the relative positions of the threaded receiving part and the threaded shaft in a self-locking manner thereby maintaining the distance between the axle and the body of the vehicle constant.

3,829,120

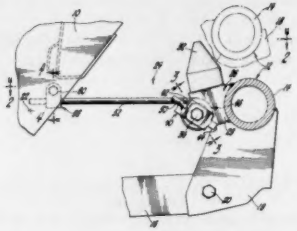
VEHICLE SUSPENSION SYSTEM

Harry L. Redding, Jr., Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 28, 1973, Ser. No. 374,467
Int. Cl. B60g 11/20
U.S. Cl. 280—124 B 4 Claims

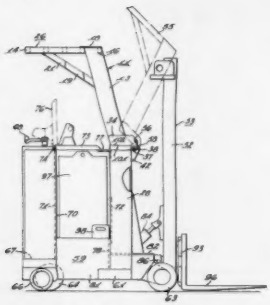
An auxiliary spring arrangement for a four-bar link type automobile suspension system wherein an axle carrier is connected to the vehicle sprung mass through a plurality of con-

trol arms which constrain jounce and rebound deflection of the axle carrier to an orbit about a transverse axis of the sprung mass, the auxiliary arrangement including a torsion spring supported on the axle carrier and having an integral lever arm engaging the sprung mass generally at the transverse axis. The torsion spring develops a turning moment on the



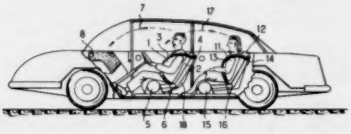
lever arm which, in turn, alters the curb height of the sprung mass under static conditions and the proximity of the lever arm to the transverse axis minimizes the tendency of the lever arm to further twist the torsion spring during jounce deflection so that the effect of the auxiliary spring on the ride rate experienced by the sprung mass is negligible.

3,829,121
PIVOTED OVERHEAD GUARD
Donald A. Ahrendt, Chicago Heights, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Mich.
Filed Mar. 23, 1973, Ser. No. 344,332
Int. Cl. B62d *21/00*
U.S. Cl. 280—150 C **3 Claims**



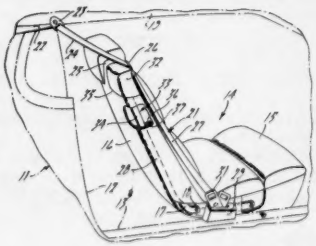
An overhead guard for the operator of an electric, counterbalanced, narrow aisle, stand-up rider lift truck which includes a pair of support legs pivotally connected to a pair of upstanding hydraulic tanks integrally formed with the truck main frame between a battery compartment and a mast. The guard may be tilted forwardly about its transverse pivot axis to a position wherein the battery of the lift truck may be lifted from the battery compartment without interference with the guard. Cooperating abutments on the upstanding part of the frame and the guard legs determine the forwardmost tilted position of the guard, in which position the center of mass of the guard lies in a vertical line forward of the transverse pivot axis. Also in the forwardly tilted position of the guard, the top portions of the legs of the guard are in overlapping relation to the mast when the latter is in its vertical position. The pivot connection between the legs of the guard and the hydraulic tanks is adjacent the top front portion of the tanks and abutments on the legs rearward of the transverse axis cooperate with abutments at the top rear portion of the tanks to support the guard in its position of operator protection.

3,829,122
SAFETY APPARATUS FOR A VEHICLE
Paul Bastide, 108, rue de Rennes, 75, Paris 6°, France
Continuation-in-part of Ser. No. 122,821, March 10, 1971, abandoned. This application May 25, 1973, Ser. No. 364,134
Claims priority, application France, Mar. 11, 1970, 70.8629; July 30, 1970, 70.28090
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 B **13 Claims**



Safety apparatus for a vehicle for minimizing injury to occupants in the event of a front-end collision comprising a seat to which the occupant is secured by a lap belt, a shoulder belt, or a harness in the form of a protective jacket, the seat or a frame for the securing means being mounted for displacement in the event of a collision to allow the occupant to travel along an extended path. An energy absorbing mechanism such as a braking device is connected to the displaceable structure to absorb the kinetic energy of the moving occupant and limit deceleration forces on the occupant. The steering wheel, steering post, instrument panel and windshield are so supported and constructed to be movable out of the path of travel of the occupant when the vehicle is subjected to intense deceleration in a collision and a shock absorber is positioned in the path of the occupant to cushion impact at the end of travel.

3,829,123
SEAT BELT POSITIONER
Thomas C. Holka, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 5, 1973, Ser. No. 376,764
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **8 Claims**



A shoulder harness coupled at its upper end to an anchor means located on a vehicle body roof side rail above and rearwardly of a vehicle seat assembly, the latter having a forwardly tiltable backrest structure. The shoulder harness in non-passenger restraining condition extends downwardly and forwardly from the anchor means across the space behind the backrest structure to an anchor means in juxtaposition to the outboard side of the seat cushion structure and interferes with access to the vehicle body space behind the seat assembly. A lift means carried on the backrest structure underlies the shoulder harness means. A drive means responsive to forward tilting movement of the backrest structure is operative to raise

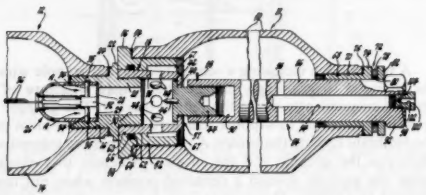
the lift means and thereby the shoulder harness toward the roof side rail into an extended substantially parallel relationship to the latter out of interference with access to the vehicle body space behind the seat assembly.

3,829,124

BLEED CAP FOR A VEHICLE AIR CUSHION INFLATOR

Norman Charns, Southfield, and Leo J. Matthews, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 16, 1973, Ser. No. 379,625
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 3 Claims



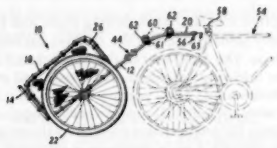
A bleed cap for a vehicle air cushion inflator includes an elongated receptacle whose ends define first and second aligned apertures that carry respective annular seal arrangements. The seal arrangement at the first end of the receptacle is adaptable to seal with the inflator and encompass the inflator outlet so that pressurized gas discharged from the inflator is received by the receptacle. A headed attachment bolt with an elongated shank is received within the receptacle extending between the seal arrangement at the second aperture and an externally threaded member at the inflator outlet. The unheaded end of the bolt includes a threaded counterbore that threads onto the externally threaded member so as to seal the headed end of the bolt against its adjacent seal arrangement and to secure the cap to the inflator. A passage in the bolt communicates the interior of the receptacle with the environment and includes an outer frustoconical end portion that is axially aligned with the shank of the bolt and threaded so as to receive an orificed frustoconical plug for bleeding the pressurized gas received within the receptacle to the environment.

3,829,125

BICYCLE TRAILER

Ronald N. Davis, Stamford, Conn., assignor to Cannondale Corporation, Stamford, Conn.

Continuation of Ser. No. 184,487, Sept. 28, 1971, abandoned.
This application June 20, 1973, Ser. No. 372,941
Int. Cl. B62k 7/04
U.S. Cl. 280—204 5 Claims



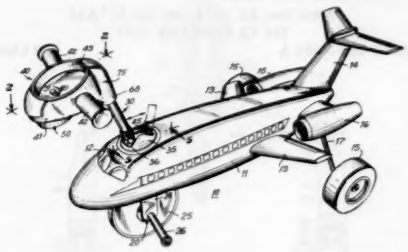
A small, light-weight two-wheel trailer for use with bicycles or for hand-towing comprises a tubular cargo body framework of unitary, generally rectangular members, a tongue composed of spaced tubular members and shaped to provide useful cargo space, and a hitch for connecting the trailer to a bicycle at a tow point in the region of the seat post. A device acting between the bicycle and the trailer provides resilient restraint that prevents accidental lateral upsetting of the trailer.

3,829,126

CHILD'S VEHICLE SIMULATING JET AIRCRAFT

Raymond J. Lohr; Calvin S. Cook, and William K. Seiersen, all of Erie, Pa., assignors to Louis Marx & Co., Inc.

Filed Apr. 4, 1973, Ser. No. 347,734
Int. Cl. A63g 1/12; B62k 21/00
U.S. Cl. 280—240 10 Claims



The vehicle has a body shaped to simulate a jet aircraft including a pilot's compartment of flight deck adjacent the front end. The rear end of the body is supported by struts on a pair of wheels, and the front end of the body is supported on a dirigible wheel which may be driven by oscillation of a "joy stick" at the pilot's compartment, the joy stick also being turnable to steer the vehicle. The joy stick projects upwardly through a slot in a cover plate secured on the upper surface of the body and covering an opening in the body, the slot increasing in width from a narrow center portion to both ends and defining the limits of movement of the upper end of the joy stick. A shield plate underlies the cover plate and is secured for movement with the joy stick so as to completely close the slot in all positions of the joy stick. A control panel is secured on the upper end of the joy stick and has an easily accessible handle for a siren-type device of a novel nature which, when operated, provides a sound simulating the noise of a jet engine. The vehicle may be steered by the feet, engaging a pair of rods extending outwardly to both sides of the front wheel, or by hand by gripping a pair of handles extending from the control panel.

3,829,127

FOUR WHEELED FOOT PROPELLED CHILDS TOY VEHICLE STEERED BY BALANCE OF RIDER

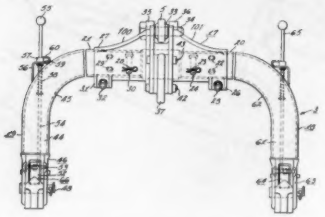
Reedy E. McLellan, Box 69, Durant, Miss. 39063

Filed Feb. 20, 1973, Ser. No. 333,520
Int. Cl. B62k 9/00
U.S. Cl. 280—259 3 Claims

A vehicle has a circular ring shaped platform frame supported by three swivelled castors. A paddle wheel-seat as-

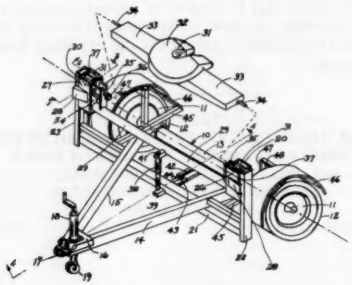
scmbly is spring mounted on the platform in a position for the paddle wheel to engage the floor surface in the center of the ring shaped platform. The mounting for the paddle wheel assembly restricts movement laterally but permits vertical movement so the wheel under weight of a rider overcomes the spring bias to engage the floor surface. A rider propels the vehicle by paddling the wheel, and steers it by balancing or leaning to one side.

3,829,128
QUICK HITCH ADAPTER
Max E. Sutton, Indianapolis, Ind., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 22, 1972, Ser. No. 317,645
Int. Cl. B60d *1/04, 1/04*
U.S. Cl. 280—461 A **10 Claims**



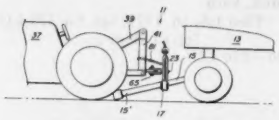
A quick hitch adapter for adjustably providing connection between a tractor and an implement for category 2 and category 3 hitches by selectively adjusting a base portion of the adapter.

3,829,129
TRAILER HITCH
Keith E. Newcomer, La Grange, Ind., assignor to W. R. Grace & Co., New York, N.Y.
Filed Dec. 7, 1972, Ser. No. 313,086
Int. Cl. B60d *7/00*
U.S. Cl. 280—476 R **3 Claims**



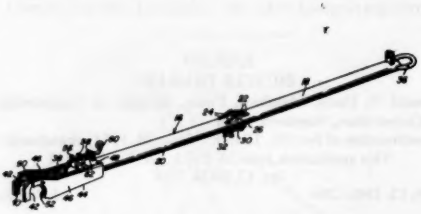
This fifth wheel hitch adapter allows a fifth wheel type trailer to be hauled by an ordinary truck equipped with a ball-hitch or pintle. Two frame members are fastened to the axle adjacent its ends, and, considerably forwardly of the axle, converge to an apex on which the actual towing head is mounted. The fifth wheel is mounted on a plate suspended on springs held in position by a framework mounted in advance of the axle. Positioning of trailers or light hauling can be accomplished by the use of this adaptor, thus freeing the trailer tractor for more profitable operation.

3,829,130
TRAILER HITCH
A. B. Cox, 101 Victoria, Cleveland, Miss. 38732
Filed May 7, 1973, Ser. No. 357,552
Int. Cl. B60 *1/10*
U.S. Cl. 280—479 **10 Claims**



A trailer hitch including a remotely actuated grapple which is intended to grippingly engage the tongue structure of a trailer conveniently along the length thereof. The grapple is pivotally attached to support structure by a vertical pivot pin to facilitate turning the trailer. A pair of springs are interposed between the grapple and the support structure to yieldably urge the grapple toward a centered position when not connected to a trailer. The grapple includes serrated jaws for biting into the tongue. Also, lug structure disposed subjacent the jaws is included to pick up the tongue and support it in a towing position prior to the jaws being caused to grip the tongue. The lugs engage the lower surface of the tongue and slide freely towards the free end thereof as the towing vehicle is caused to move in a direction away from the trailer.

3,829,131
AIRCRAFT TOW BAR
George E. Moore, Jr., San Angelo, Tex., assignor to Jewel B. Moore, San Angelo, Tex.
Filed Mar. 7, 1973, Ser. No. 338,825
Int. Cl. B60d *1/14*
U.S. Cl. 280—493 **7 Claims**



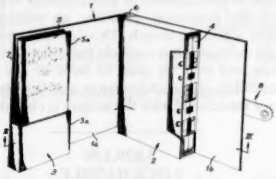
An elongated tension bar including front and rear end portions pivotally joined together for relative oscillation about a transverse axis. The front end of the bar includes a ring for attachment to a towing vehicle and the rear end of the bar includes a bifurcated end portion whose furcations have generally semi-cylindrical downwardly opening notches formed therein for engagement over the axle ends of the nose wheel of an aircraft. Latch structure is provided for partially closing the lower portions of the axle end receiving notches and thereby locking the bifurcated end to the associated nose wheel axle. Also, the latch means includes a locking structure for locking the latch means of the tow bar in the operative position and also serving, when desired, to maintain the tow bar in a folded compact position for portability and compact storage on an associated aircraft.

3,829,132

COMPOSITE COVER-SUPPORT FOR CASSETTES AND BOOKS

Marcia B. Willieme, 22, Avenue Jonet, 1640 Rhode-St. Genese, Belgium

Filed Jan. 24, 1973, Ser. No. 326,410
Claims priority, application Belgium, Oct. 11, 1972, 789915
Int. Cl. B42d 3/18
U.S. Cl. 281—31 12 Claims



A composite cover-support for tape cassettes and books, comprises a cover assembly, similar to the covers of a book, and, joined to this assembly, at least one receptacle for at least one tape cassette and at least one means of fixation for at least one book, these elements being arranged in such a manner that, when said cover assembly is folded up upon itself, the cassette and the book lie adjacent each other, occupy substantially the total space between the cover members and are coplanar, with the cassette being held in position within the cover assembly by an edge of the book or by an edge of the support means for the book within the cover assembly.

3,829,133

CODED CHECKS AND IN METHODS OF CODING

Edward A. Smagala-Romanoff, P.O. Box 16114, West Palm Beach, Fla. 33406

Filed June 26, 1972, Ser. No. 266,316
Int. Cl. B42d 15/00
U.S. Cl. 283—6 4 Claims

There is disclosed in the present application a form of check incorporating a masked individual code for each check predictable before unmasking only by the authorized drawer of the check who has advance knowledge of the key by which the individual code for the check is determined. Different drawers are provided with different keys for determining individual check codes.

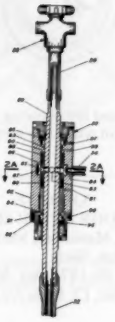
3,829,134

ROTARY TUBULAR COUPLING

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 150,536, June 7, 1971, Pat. No. 3,720,264. This application July 24, 1972, Ser. No. 274,787
Int. Cl. F16l 27/08, 55/00
U.S. Cl. 285—14 1 Claim

Method and apparatus for directionally applying high pressure jets to well liners to clean openings which are plugged with foreign matter. High velocity jets of liquid having a velocity in excess of 700 feet per second are jetted from jet orifices having a standoff distance between 5 and 10 diameters of the orifice from the openings to remove substantially all plugging material from the openings. Apparatus for circulating foam is provided in combination with apparatus for delivering high pressure jets. New swivels and check valves permit rotation and reciprocation of the jet tool and tubing string while maintaining high pressure in the apparatus.



3,829,135

BELL FITTING FOR REINFORCED PLASTIC-MORTAR PIPE AND THE LIKE

Jay S. Forni, 1101 Leema Dr., Danville, Calif. 94526

Filed July 3, 1973, Ser. No. 376,121
Int. Cl. F16l 9/08; B22d 21/14
U.S. Cl. 285—55 10 Claims

Bell-type fittings for reinforced plastic-mortar pipe are made utilizing cement-lined iron pipe sections, by welding to each end of each section a spin-formed bell with a flared outer end and an inturned portion welded to the iron pipe. The spin-forming provides the increased tensile strength needed to hold the main portion of the bell in round. After the bell is welded to the iron pipe section, it is exteriorly coated with reinforced cement. Then a standard end for reinforced plastic-mortar pipe—a spigot having an exterior annular groove with a gasket—can be inserted into the bell, thus completing a fluid-tight seal.

3,829,136

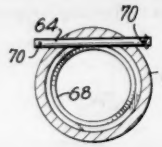
SLIP-FIT ELECTRICAL COUPLING

Jonah Eidelberg, Huntington Station, N.Y., assignor to Electrical Fittings Corporation, East Farmingdale, N.Y.

Division of Ser. No. 66,408, Aug. 24, 1970, Pat. No. 3,703,303. This application Oct. 6, 1972, Ser. No. 295,701
Int. Cl. F16l 21/06
U.S. Cl. 285—383 8 Claims

An electrical coupling for attachment to a pair of rigid conduits in a confined space includes a sleeve member which slidably receives the conduit, and further includes a stop

member centrally disposed on the sleeve for movement into and out of the bore of the sleeve for providing a stop when ex-

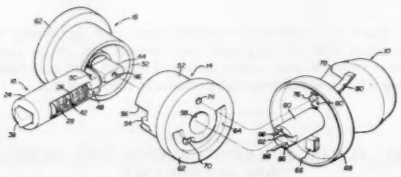


tending into the bore, and for allowing the sleeve to be slipped back onto either conduit when the screw is removed from the bore of the sleeve.

3,829,137
DOOR LATCH SET

Robert D. MacDonald, Metamore, Mich., assignor to Cardinal of Adrian, Inc., Adrian, Mich.

Filed Feb. 18, 1972, Ser. No. 227,407
Int. Cl. E05c *1/12*
U.S. Cl. 292—171 **17 Claims**

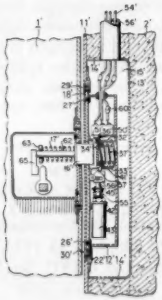


A molded plastic door latch set comprises two knobs, two sleeves, and a latch assembly, with the knob and sleeve pairs being substantially identical. Only three screws are required to assemble the set and secure it within a door. Rotation of the knobs actuates the latch by winding a flexible portion of the latch around the knob spindle.

3,829,138
REMOTELY CONTROLLED LATCH SYSTEM FOR FIRE DOORS AND THE LIKE

Yoshio Morita, 9-2, Hatchobori 3-chome, Chuo-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 272,346, July 17, 1972, abandoned. This application Oct. 27, 1972, Ser. No. 301,663
Claims priority, application Japan, July 17, 1971, 46-63197
Int. Cl. E05c *1/16*
U.S. Cl. 292—254 **7 Claims**

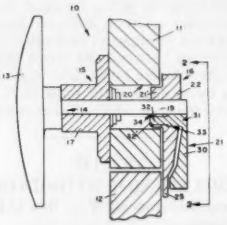


A remotely controlled latch system for releasably retaining a fire door or the like in a position in readiness for automatic closing to close a passage or opening. The latch system comprises latch apparatus including a dead bolt which is operable to a retracted and a projected position in which it unlatches or unlocks the door and locks it respectively. A bolt-release mechanism, operated remotely, has a latched operator or actuator that is released from a retracted position to assume a projected position in which it engages the dead bolt and causes it to assume its retracted or unlatched position. The remote control signal is applied by a sensor that senses physical conditions indicative of the presence or existence of a fire. The position of the actuator is continuously sensed and when it assumes its projected position an electrical signal is generated by a sensing switch. This signal is employed for de-energizing a solenoid that controls the unlatching or release of the actuator and may be used to indicate the operative unlatched condition of the latch system and thereby indicate that the fire door associated with the system is closed.

3,829,139
LOCK HANDLE

Llewellyn O. Storlie, Decorah, Iowa, assignor to Deco Products Company, Decorah, Iowa

Filed Mar. 27, 1972, Ser. No. 238,204
Int. Cl. E05c *3/00*
U.S. Cl. 292—349 **4 Claims**

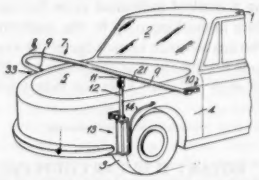


A door lock provided with a member for releasing the lock from the inside in case of emergency, which member also serves to adjust the lock to doors of different thicknesses.

3,829,140
SAFETY DEVICE FOR VEHICLES

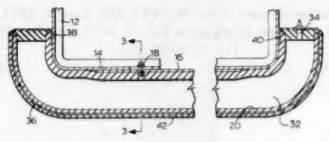
Victor James Jehu, Crowthorne, and Leonard Charles Pearson, Wokingham, both of England, assignors to National Research Development Corporation, London, England

Filed July 31, 1973, Ser. No. 384,300
Claims priority, application Great Britain, Aug. 11, 1972, 37612/72
Int. Cl. B60r *19/00*
U.S. Cl. 293—15 **5 Claims**



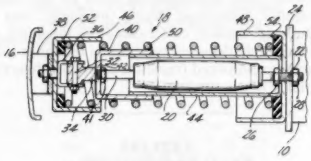
A safety device for vehicles comprises a movable member which normally lies stowed but which, upon collision of the vehicle with a pedestrian, is raised by a motor to form a barrier around an upward-facing surface upon which the pedestrian may land, thus restraining him from falling off again. This surface may be part of the vehicle, e.g. the bonnet. The barrier may contain fracture devices which break if the vehicle collides with a massive object, e.g. another vehicle.

3,829,141
MOTOR VEHICLE BUMPER
Godwill M. Igwe, 180 Queen Mary Rd. Apt. 708, Kingston, Ontario, Canada
Filed Nov. 28, 1972, Ser. No. 310,125
Int. Cl. B60r 19/10
U.S. Cl. 293—71 P 7 Claims



A motor vehicle bumper includes a tube containing gas under pressure mounted on a rigid support plate and a resilient elongated metal band extending in tension in contact with the outer surface of the tube.

3,829,142
SHOCK ABSORBING MOUNTING FOR MOTOR VEHICLE
Dominic M. Bommarito, 14977 Arcola, Livonia, Mich. 48154
Filed Jan. 22, 1973, Ser. No. 325,427
Int. Cl. B60r 19/04
U.S. Cl. 293—86 4 Claims

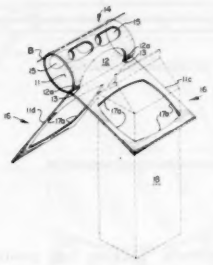


A vehicle having a bumper connected to the vehicle frame by a pair of telescopic tubes disposed in a cylindrical helical spring such that the vehicle can be raised by jacking up the bumper. A shock absorber is housed within the tubes to yieldingly oppose the motion of the bumper toward the vehicle frame. The helical spring biases the bumper away from the frame so that the bumper can receive an impact in a collision without damaging the vehicle body.

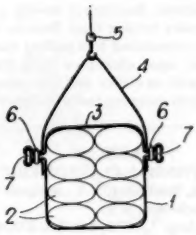
3,829,143
CARTON CARRIER
Stanford W. Bird, Salt Lake City, Utah, assignor to Plastronics Corporation, Salt Lake City, Utah
Filed Mar. 22, 1973, Ser. No. 343,831
Int. Cl. B65d 71/00
U.S. Cl. 294—31.2 4 Claims

This invention relates to a carton carrier formed from a flat sheet of flexible material in which holes and notches of various shapes are formed. The carrier is assembled by drawing one end of the sheet through an appropriate central hole therein until edges defining the hole slide into notches formed on each side of the flat sheet.

So assembled, a rolled carrying handle and angularly extending end flaps are formed. Aligned openings in the handle permit ready finger insertion for easy carrying and larger openings in the end flaps allow the end flaps to be placed around an upstanding carton such that lifting on the handle will bend the carrier around the cartons whereby the cartons can be readily lifted.



3,829,144
CARGO SLING
Frank Nattrass, Fallows End, Brearton, Harrogate, England
Filed May 9, 1972, Ser. No. 251,685
Claims priority, application Great Britain, May 26, 1971, 17261/71; July 29, 1971, 35663/71; Jan. 21, 1972, 3013/72
Int. Cl. B66c 1/18
U.S. Cl. 294—74 9 Claims

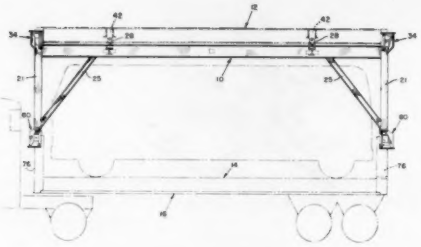


A two part load encircling sling comprising a continuous loop secured to a second part of substantially unvarying length by means allowing movement of the loop in one direction but restricting or preventing it in the other; the sling in use tightening and remaining tightened about the load.

3,829,145
SPREADER BAR EXTENSION
Carl R. Gottlieb, and Robert N. Campbell, Jr., both of Mobile, Ala., assignors to Sea-Land Service, Inc., Elizabeth, N.J.
Filed July 22, 1969, Ser. No. 843,557
Int. Cl. B66c 1/66
U.S. Cl. 294—81 SF 10 Claims

A spreader bar extension for increasing the effective length of a crane-carried lifting spreader bar used for transferring large, bulky, unitary loads mounted on supports such as flat-bed containers, the extension comprising a generally rectan-

gular framework having flared guides at the upper and lower ends thereof for aligning the framework with a spreader bar

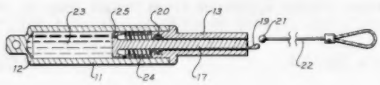


and a load respectively. Locking lugs positioned on the framework are releasably coupled to the spreader bar locking lugs for operation therewith.

3,829,146
DELAYED PARACHUTE DISCONNECT

John E. Laswell, Bloomington, and John E. Wildridge, Washington, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 30, 1973, Ser. No. 383,841
Int. Cl. B64d *17/38*
U.S. Cl. 294—83 A **1 Claim**

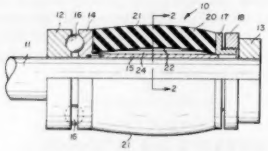


A delayed parachute disconnect having a piston slidably mounted in a cylinder having fluid therein. One end of the piston is releasably connected to a pulling element which automatically releases upon clearance from the cylinder. The piston is provided with an orifice and the speed of the piston is controlled by the fluid escaping through the orifice.

3,829,147
FORCE-RESPONSIVE ELASTOMERIC GRIPPER

Edward L. Ryswick, Rochester, N.Y., assignor to Varispace Industries, Inc., Rochester, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,419
Int. Cl. B25b *27/00*
U.S. Cl. 294—93 **15 Claims**

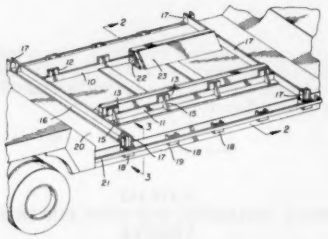


A gripper with fixed and movable flanges squeezed together axially as a function of applied force to move an elastomeric ring radially for gripping uses an elastomeric ring that has a crowned gripping surface that is generally convex in axial cross section when the ring is unstressed. The opposite surface of the ring is generally concave in axial cross section, and the ring is supported on a cylindrical surface so that the axially central region of the ring is free to move radially toward the support surface. Such a ring can grip the outside of the shaft or the inside of a core for turning or lifting. Also, several improved actuators drive the movable flange as a function of the applied force.

3,829,148
COIL RACK

Jerry L. Stoneburner, 5815 Market St., North Jackson, Ohio 44512

Continuation-in-part of Ser. No. 151,180, June 9, 1971, Pat. No. 3,724,675. This application Feb. 7, 1973, Ser. No. 330,277
Int. Cl. B60p *9/00*
U.S. Cl. 296—3 **8 Claims**

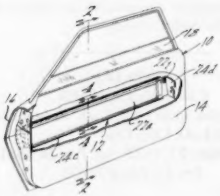


A rack for heavy steel coils has a pair of spaced parallel reinforced frame members with a plurality of secondary frame members positioned therebetween and transversely positioned angle members having stake pocket engaging configurations on their outer ends positioned at each of the ends of the spaced parallel reinforced frame members and secured thereto. Built up wooden coil cushioning members are positioned in oppositely disposed relation on the inner sides of the spaced parallel reinforced frame members for directly receiving and holding heavy steel coils.

3,829,149
BEAM CONSTRUCTION

F. Bradley Stevens, Ann Arbor, Mich., assignor to L & L Products, Inc., Romeo, Mich.

Filed Feb. 9, 1973, Ser. No. 331,079
Int. Cl. B62d *27/04*
U.S. Cl. 296—28 R **20 Claims**



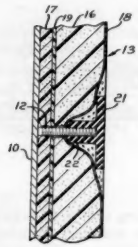
A novel structural beam having energy absorbing and load characteristics admirably suited for protecting the passenger compartment of a vehicle during collision, for example, as a side guard beam. The beam construction comprises a blade-supporting matrix of novel composition and structure contained within a hollow sheet metal box beam.

3,829,150

APPARATUS FOR REMOVABLE SECURING SOUND-PROOFING MATERIAL TO A CONSTRUCTION VEHICLE

James C. Moore, Clackamus, Oreg., assignor to Portland Wire & Iron Works, Portland, Oreg.

Filed Nov. 13, 1972, Ser. No. 305,740
Int. Cl. E04b 1/74
U.S. Cl. 296—39 A 1 Claim



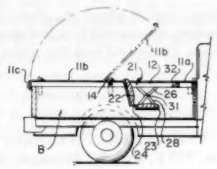
Apparatus is disclosed for removably securing a covering of sound-proofing material to a construction vehicle. The apparatus includes a flexible button which has a smooth-walled sleeve which is force fitted over a threaded weld stud. The button is flexible enough so that it can be applied to, and removed from the weld stud without the need of a tool, yet it is hard enough so that the stud will not penetrate it when impacted.

3,829,151

TONNEAU COVER AND SEAT ASSEMBLY FOR PICKUP-TYPE VEHICLE BOXES

Ronald L. Fellenstein, 1410 W. Holly Dr., Broomfield, Colo. 80020

Filed Oct. 3, 1972, Ser. No. 294,603
Int. Cl. B60n 1/00; B60p 7/02
U.S. Cl. 296—64 11 Claims



A tonneau cover and rumble-type seat assembly for the box of a pickup-type vehicle wherein a tonneau cover is provided with an access opening and a convertible seat and closure are operatively associated with the tonneau cover. In one position the seat seats passengers in the box and the seat is movable to another position to close off the access opening.

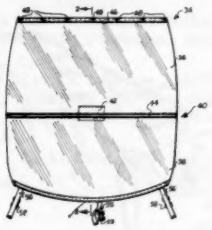
3,829,152

VEHICLE WINDSHIELD ASSEMBLY

L. T. Hobbs, Raleigh, N.C., assignor to U.S. Supply Company, Raleigh, N.C.

Filed Mar. 8, 1973, Ser. No. 339,085
Int. Cl. B60j 1/02; B62j 17/00
U.S. Cl. 296—78 5 Claims

In abstract, a preferred embodiment of the present invention is a windshield assembly for a vehicle which extends generally between the vehicle top and the lower frame structure thereof in the front portion of such vehicle. The windshield assembly comprises an upper and lower windshield secured together along an inner side of each by a transverse seam structure. A series of snap-on securing means are disposed along the upper edge of the upper windshield and are adapted to fasten to receiving means secured to the top of said vehicle. For securing the lower portion of the windshield assembly, the present invention provides a series of laterally spaced straps threaded through the lower portion of the lower windshield and adapted to tie around a lower windshield attaching means projecting forwardly from the body of the vehicle.

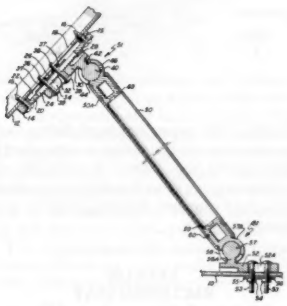


3,829,153

BRACE AND METHOD OF BRACING A WINDSHIELD TO A DASHBOARD

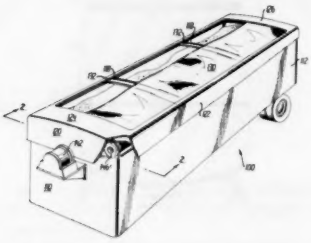
Edward B. Fussell, Jr., Altamonte Springs, Fla., and Don L. Redmon, Nashville, Tenn., assignors to Water Bonnet, Inc., Casselberry, Fla.

Filed Dec. 1, 1972, Ser. No. 311,378
Int. Cl. B60j 1/04
U.S. Cl. 296—90 9 Claims



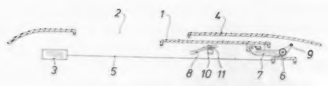
A brace, extending between a windshield and a dashboard that includes a stem interposed between the windshield and the dashboard. A dashboard bracket, connected to one end of the stem by a universal joint, is rigidly secured to the dashboard. A windshield bracket is rigidly secured to the windshield. A foot, secured to the other end of the stem by a universal joint, is brought into engagement with the windshield bracket and is rigidly connected to the windshield bracket in the position of engagement of the foot with the windshield bracket. Means are provided on the windshield bracket and foot so that the angle of the stem may be varied and the brace can therefore be used with different styles of boats.

3,829,154
VEHICULAR RETRACTABLE COVER
William R. Becknell, P.O. Box 64, Joiner, Ark. 72350
Filed June 25, 1973, Ser. No. 373,005
Int. Cl. B60j *7/06*
U.S. Cl. 296—98 **1 Claim**



In a retractable vehicular cover of the tarpaulin type, a remotely controllable system for the opening and closing of the container or trailer. The invention is particularly adapted to tractor-trailers and trucks.

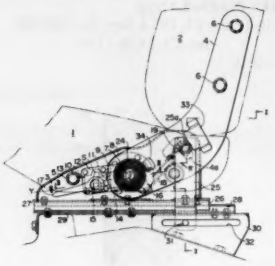
3,829,155
CONTROL DEVICE FOR POWER OPERATED AUTOMOBILE SLIDING ROOFS
Alfons Lutz, Krailling, Germany, assignor to Webasto-Werk W. Baier KG, Stockdorf/Munich, Germany
Filed June 22, 1973, Ser. No. 372,671
Claims priority, application Austria, July 4, 1972, 85733/72
Int. Cl. B60j *7/00*
U.S. Cl. 296—137 F **3 Claims**



A control device for power operated sliding roof panels of automobiles where the electric motor is controlled by a switch which is operated by the control lever of the sliding roof mechanism whenever the closed position is reached. The control lever includes a cam arm portion guided by a cam groove which operates the switch.

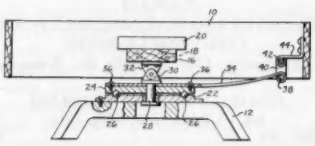
3,829,156
RECLINING SEAT
Teiji Iida, and Noboru Yoshimura, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Sept. 28, 1972, Ser. No. 292,889
Claims priority, application Japan, Sept. 30, 1971, 46-76493
Int. Cl. B60r *21/10*
U.S. Cl. 297—216 **1 Claim**

The present invention relates to a reclining device for a seat-back and to a reclining seat having an improved seat mounting to a vehicle. An elongated bore is formed in a seat-back frame, having a bore length corresponding to an amount of angle of inclination of the seat-back frame, and a pin is formed on a seat cushion frame, for mating with and disengaging from said elongated bore. Formed in a seat track bracket is an elongated bore having a length corresponding to an amount of back and forth sliding movement of the seat, with which bore a pin mate which is fitted into a seat track holding plate fixed to an upper rail of the seat track.



The present reclining seat permits free adjustment of angle of inclination of the seat-back, affords simple construction and sufficient anti-collision strength bringing improved safety of the passenger.

3,829,157
SWIVEL ROCKING CHAIR
Clement Lange, Jr., R.R. No. 2, Huntingburg, Ind. 47532
Filed Mar. 2, 1973, Ser. No. 337,412
Int. Cl. A47c *3/02*
U.S. Cl. 297—263 **10 Claims**



A swivel rocking chair in which the chair is resiliently controlled during rocking movement by a leaf spring arrangement connected between the swivel and the moveable part of the chair.

3,829,158
VEHICLE SEAT HARNESS
Robert O'Connor, 777 E. 48th St., Brooklyn, N.Y. 11225
Filed Aug. 31, 1972, Ser. No. 285,132
Int. Cl. A62b *35/60*
U.S. Cl. 297—390 **6 Claims**

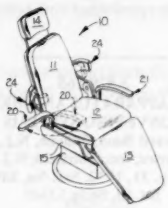
The seat harness is constructed to extend over the rear of a vehicle seat while rising slightly above the seat and shoulder of

the occupant and then downwardly to the waistline of the occupant. The harness includes a pair of hook-shaped members which are spaced from the occupant to restrain excessive forward motion of the occupant. The hook-shaped members are spring biased to bias the harness onto the vehicle seat when the occupant is not seated and thus insure that the harness is used when the seat is occupied.

3,829,159
TREATMENT CHAIR HAVING IMPROVED MOVABLE ARM SUPPORT DEVICES

Dennis F. Leffler, Charlotte, N.C., assignor to Pelton & Crane Company, Charlotte, N.C.

Filed May 30, 1972, Ser. No. 257,752
Int. Cl. A47c *7/54*
U.S. Cl. 297—417 **4 Claims**

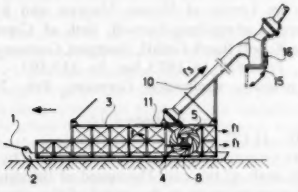


In a treatment chair having a seat rest and a back rest for receiving a patient for treatment by an operator, the improvement of movable arm supports characterized by their ability to move for easy access to and from the side of the chair by the patient and easy access to the seated patient by the operator. These arm supports include a lower arm rest movable from a first position in which the arm rest is generally parallel with the side edge of the chair for supporting the lower arm of the seated patient to a second position in which the arm rest extends generally outwardly from the side edge of the chair for easy access to and from the chair from the side thereof by the patient. The movable arm supports further include upper arm rests mounted on the side edge of the back rest of the chair and extending forwardly of the chair in a generally arcuate position for supporting the upper arm of the patient from rearward and outward movement. The upper arm rests are constructed to move to other positions toward the seated patient only for allowing closer access to the seated patient by the operator.

3,829,160
HYDRAULIC DREDGING APPARATUS

Elie Condolios, Grenoble, France, assignor to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed June 20, 1973, Ser. No. 371,588
Claims priority, application France, June 20, 1972, 72.22119
Int. Cl. E02f *7/06*
U.S. Cl. 299—8 **8 Claims**

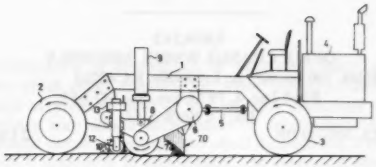


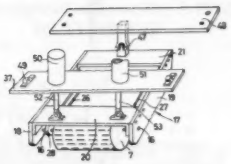
Dredging bucket for hydraulic dredging of modules at a great depth, constituted by a main frame on skids, means for bringing the scraped up material into a current of water by the advancing of the dredging bucket and means bringing the nodules cleared of clay towards the hydraulic tubes provided with pumping systems to bring them to the surface.

3,829,161
APPARATUS FOR MILLING ROAD SURFACES

Reinhard Wirtgen, 5461 Windhagen, Hohner Strasse, Germany

Filed Apr. 17, 1972, Ser. No. 244,775
Claims priority, application Germany, Apr. 16, 1971, 2118458; Sept. 11, 1971, 2145497; Jan. 26, 1972, 2203529; Jan. 26, 1972, 2203530
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **9 Claims**





Apparatus and method for milling road surfaces wherein a motor driven rotatable roller, equipped with hard-metal cutters, is moved horizontally at a uniform level relative to the road surface, the level being such that the cutters engage the road surface during rotation of the roller. In accordance with the present invention, the roller is rotated in a direction opposite to the direction of forward movement of the axis of the roller relative to the road surface. That is, the cutters mill the road surface in a direction of forward movement of the axis of the roller. The apparatus of the invention further includes means for varying the level of the roller, and for varying the tilt of the roller relative to the road surface.

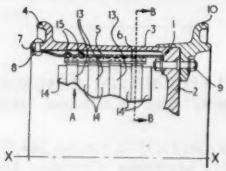
3,829,162
WHEEL ASSEMBLIES

Ian Leonard Stimson, Rugby; Frederick Sidney Dowell, and Benedict Pascal Healy, both of Coventry, all of England, assignors to Dunlop Limited, Erdington, Birmingto, England

Filed July 26, 1972, Ser. No. 275,246
Claims priority, application Great Britain, July 27, 1971, 35228/71
Int. Cl. B60b *19/00*
U.S. Cl. 301—6 A **16 Claims**

A wheel assembly comprising a wheel having disc and rim portions, a drive means in the form of a number of circum-

ferentially spaced drive dogs arranged to extend substantially parallel to the intended axis of rotation of the wheel assembly,



and an intermediate circumferentially extending heat isolating member arranged to extend between the drive dogs and the wheel, of which the following is a specification.

3,829,163

QUICK CHANGE WHEEL ASSEMBLY

Paul Hans, 706 Locust Ln., Louisville, Ky. 40213

Filed Apr. 4, 1973, Ser. No. 347,653

Int. Cl. B60b *3/14*

U.S. Cl. 301—9 DN **2 Claims**

A quick change wheel assembly is disclosed comprising in combination a wheel sleeve, a lug nut, and a bullet nosed stud. The bullet nosed stud is attached to the wheel hub and has a threaded shank portion having threads engageable with the lug nut and bullet nosed section of diameter smaller than the diameter of the lug nut threads. The wheel sleeve is inserted into the holes in the wheel disc, has a raised shoulder with a conical receiving section and has at the opposite end from said raised shoulder a second conical receiving section which is flared to hold the sleeve in place on the wheel disc. The threaded lug nut for receiving the stud has one end corresponding to the shape of the conical receiving end of the raised shoulder and said nut is attached to the sleeve at the conical receiving section by means of a weak glue.

3,829,164

PNEUMATIC FEEDER FOR PLURAL MAKER SYSTEMS

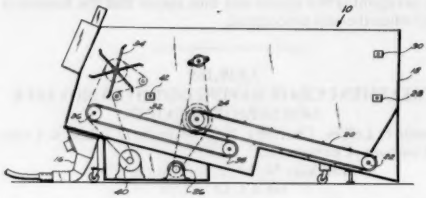
John Schoeb, Petersburg, Va., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Sept. 13, 1972, Ser. No. 288,497

Int. Cl. B65g *53/04*

U.S. Cl. 302—28 **6 Claims**

A tobacco feeder is coupled to two multiple cigarette maker systems through two tubes, one for each system. The feeder is driven by a two-speed motor. When only one system requires tobacco, the feeder is driven at low speed, whereas it will be



switched to the higher speed when both systems require tobacco simultaneously.

3,829,165

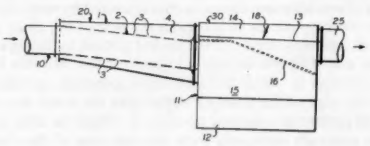
ANTI-STOPPAGE APPARATUS AND METHOD FOR AIR CONVEYING SYSTEMS

Bruce Theodore Edward Boon, Wayne, N.J., assignor to Eastern Cyclone Industries, Inc., Fairfield, N.J.

Filed Aug. 31, 1972, Ser. No. 289,368

Int. Cl. B65g *53/40*

U.S. Cl. 302—59 **5 Claims**



Anti-stoppage or anti-clogging apparatus and method for pneumatic conveying system wherein the conveyed material is more efficiently and more rapidly separated from the conveying pneumatic stream. A specially designed bypass element or pre-air separation station is positioned upstream and adjacent the separation or collection station. This pre-air separation station functions to reduce the operating vacuum or pressure of the system by releasing or separating at least a portion of the conveying air stream from the material being conveyed prior to the material entering the separation or collection station. The released or separated portion of air by-passes the area of the separation station where the conveyed material is removed from the system.

3,829,166

BRAKE CONTROL APPARATUS FOR A MOTOR CAR

Alexander von Loewis of Menar, Mauren, and Klaus-Otto Riesenberg, Ludwigsburg-Ossweil, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 16, 1973, Ser. No. 333,293

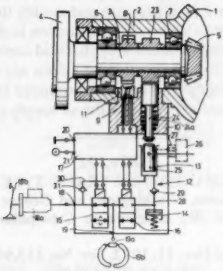
Claims priority, application Germany, Feb. 22, 1972, 2208185

Int. Cl. B60t *8/10*

U.S. Cl. 303—21 CG **12 Claims**

The brake system of a motor car is controlled by a portion of the drive shaft of the car. The speed of the drive shaft is higher, but proportionate to the speed of the wheel shaft. A pulse generating sensor is operated by the drive shaft portion which is already provided in the motor car, to supply pulses at

a frequency which varies with the shaft speed, to an electronic control means which responds in dependence upon the pulses



to interrupt communication between the master cylinder and the wheel brake cylinder by operation of an electro-magnetic valve.

3,829,167

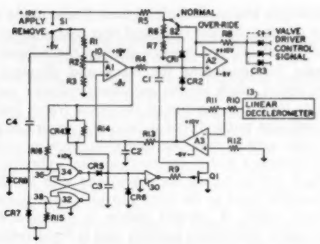
AUTOMATIC DECELERATION CONTROL SYSTEM

Edgar J. Rouf, Akron, and Harold R. Booher, Youngstown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 21, 1972, Ser. No. 308,512

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 CG **17 Claims**



Disclosed is a unique automatic deceleration control system of such a nature that it may be instantaneously interrupted by anti-skid control circuitry when adverse conditions exist and instantaneously restored to operation when such adverse conditions cease. A comparator circuit emits an output indicative of the comparison between the actual deceleration of the vehicle and a preselected desired rate of deceleration. An RC circuit receives the output of the comparator and forms ramp functions therefrom so as to achieve steady rates of application and release of brake pressure. Associated with the RC circuit is clock and initialization circuitry. The clock circuit inhibits the discharge of the capacitor of the RC circuit when adverse braking conditions exist and the initialization circuit inhibits the affect of the clock circuit when the brakes are initially placed under the control of the automatic deceleration control circuit. Also connected to the RC circuit is a current driving amplifier to provide the necessary power for controlling the brake valves of the vehicle in accordance with the output of the RC circuit.

3,829,168

VEHICLE WHEEL BRAKE ANTI-LOCK SYSTEM

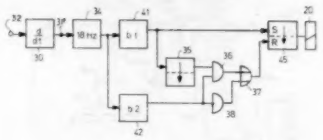
Eberhard Schnaibel, Hemmingen, and Werner Gotz, Friolzheim, both of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhoke, Germany

Filed Feb. 8, 1973, Ser. No. 330,674

Claims priority, application Germany, Feb. 12, 1972, 2206808

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 BE **17 Claims**



Acceleration or deceleration of wheels are sensed and a valve which either connects the wheel brake cylinder to a source of pressure fluid or to a drain is controlled in accordance with sensed acceleration or deceleration. A first threshold switch is responsive to wheel deceleration, a second switch is responsive to acceleration, and controls draining of pressurized brake fluid from the wheel brake cylinder.

3,829,169

ANTI-SKID BRAKE CONTROL SYSTEM FOR VEHICLES

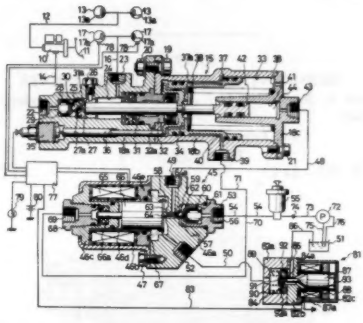
Masami Inada, Tokyo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 4, 1973, Ser. No. 357,168

Claims priority, application Japan, May 5, 1972, 47-44425

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F **3 Claims**



Anti-skid brake control system for vehicles including a hydraulic braking circuit and anti-skid actuator driven by pump powered hydraulic pressure for controlling the braking pressure in response to an electric signal indicating a wheel rotational condition. The actuator includes a cut off valve for ON-OFF controlling of the braking circuit, a hydraulic pressure reducing piston operatively connected to the cut off valve for reducing the hydraulic brake pressure of the circuit, and an electro-magnetic valve which is actuated to change over the pump powered hydraulic pressure in response to the skid sensing signal whereby, the actuator includes a further electro-magnetic valve which is to be actuated as a safety valve in case the skid sensing signal is generated for an extended period of time such that the normal braking operation might be in danger of a no-braking condition.

3,829,170

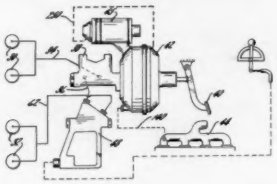
ANTI-SKID BRAKE SYSTEM

Edward A. Rockwell, 11773 Sunset Blvd., Los Angeles, Calif. 94601, and Harvison C. Holland, 230 22nd St., Santa Monica, Calif. 90806

Division of Ser. No. 83,732, Oct. 27, 1970, Pat. No. 3,738,711. This application June 11, 1973, Ser. No. 368,751

Int. Cl. B60t *8/14*

U.S. Cl. 303—21 CG **15 Claims**



A power braking system is disclosed for vehicles producing a maximum stopping force for any given road condition while preventing the vehicle from skidding. A pressure proportioning device varies the ratio of pressures between the front and rear brake lines of the vehicle as braking increases to achieve maximum stopping force for any given road condition at both the front and rear wheels. When increasing brake line pressure produces braking forces which exceed the maximum achievable stopping forces as determined by tire-road coefficient of friction, and the wheels start to lock-up, the resulting reduction in deceleration is detected by deceleration responsive control apparatus which operates the power booster of the power booster of the power brake system to momentarily reduce the brake line pressures both front and rear which allows the wheels of the vehicle to resume turning, and then reapplies the brake lines pressure, the cycle being repeated. The attendant result is the modulation of the braking force about the maximum for both front and rear wheels at the same time.

3,829,171

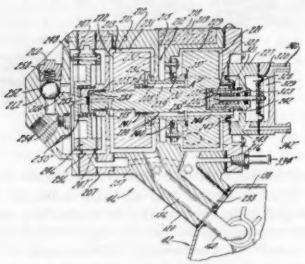
SKID CONTROL SYSTEM COMPONENTS

Edward A. Rockwell, 167 Ashdale Pl., Los Angeles, Calif. 90049

Filed Aug. 3, 1971, Ser. No. 168,683

Int. Cl. B60t *8/18*

U.S. Cl. 303—24 C **11 Claims**



Deceleration controlled skid control automotive braking system components including a controller, a power booster and a variable proportioning device are disclosed. The controller utilizes the force produced upon accelerating (or decelerating) a mass suspended in low friction bearings within a housing, to actuate a three-way valve having high and low supply pressures imposed across it. The three-way valve is constructed to provide a control fluid pressure which varies as a function of vehicle deceleration, and is adapted to serve as the supply pressure for power actuated devices, such as the power booster and the variable proportioning device. The controller includes a device modifying the action of the three-way valve upon sudden reduction in vehicle deceleration, to change the control fluid pressure and modify the action of the power booster upon such sudden reduction in deceleration indicating impending wheel lock-up, for skid control. The power booster and variable proportioning device are constructed to utilize the varying control pressure produced by the deceleration actuated three-way valve as the air supply pressure.

3,829,172

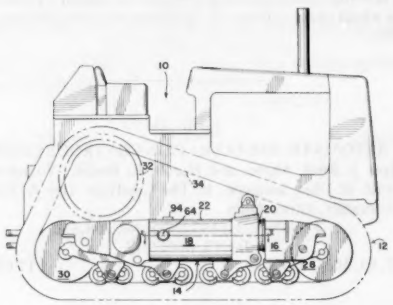
RECOIL MECHANISM FOR TRACK-TYPE TRACTORS

Eldon D. Oestmann, Washington, and George F. Alexander, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 11, 1972, Ser. No. 313,969

Int. Cl. B62d *55/00*

U.S. Cl. 305—10 **16 Claims**



A track-type tractor includes a track frame made up of front and rear portions having front and rear rotatable members associated therewith, and a track trained thereabout. Included are means for tensioning the track and allowing rotatable member recoil, such means including cylinder means fixed relative to the front portion of the track frame and having a first cylindrical portion and a second cylindrical portion of larger cross section than the first cylindrical portion. A first piston is disposed within the first, smaller cylindrical portion and helical spring means are associated with the first piston and a member fixed to the front portion of the track frame to urge them apart. A second piston is disposed within the second, larger cylindrical portion and is fixed relative to the rear portion of the track frame. The cylinder means and first and second pistons define a chamber which is filled with substantially incompressible fluid. Addition of fluid to this chamber moves the front and rear track frame portions relatively apart. The spring means allow recoil of the front track frame portion toward the rear track portion, and because of the incompressibility of the fluid and the different piston sizes, the compressive movement of the spring means is greater than the corresponding amount of recoil movement of the front track frame portion toward the rear track frame portion.

3,829,173

SEALED PIN JOINT FOR TRACK ASSEMBLIES

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

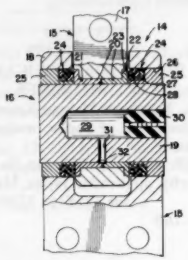
Filed Apr. 27, 1973, Ser. No. 355,202

Int. Cl. B62d *55/20*

U.S. Cl. 305—11 **27 Claims**

A track assembly comprises a plurality of shoes closely coupled together by a pair of articulated link assemblies. Each

link assembly comprises a plurality of fork and blade type links pivotally mounted together by a tubular pin and a pair of



annular bearings. An annular seal and retaining means therefor are disposed on an outboard side of each of the bearings.

3,829,174

GANG PLATE FASTENING ASSEMBLY AND ENDLESS TRACK FORMED THEREWITH

Ian A. Thomas, Calgary, Alberta, Canada, assignor to Flextac Nodwell Ltd., Calgary, Alberta, Canada

Filed Oct. 29, 1973, Ser. No. 410,421

Int. Cl. B62m *27/02*

U.S. Cl. 305—35 EB **11 Claims**

A gang plate fastening assembly particularly conceived to be used to inexpensively and readily secure grouser bars of aluminum extrusion to form endless tracks for tracked vehicles, but which may also be used to secure other members having an appropriate elongated passage therein. The grouser bar and gang plate fastening assembly includes a grouser bar having an elongated passage, a groove along the latter forming opposite faces adapted to non-rotatably restrain nuts in the groove, and a gang plate engaged into the elongated passage merely holding a shoulder portion of the nuts such that the latter are in predetermined spaced apart relationship and in registry with a row of bolt receiving bores along the grouser bar.

3,829,175

RAIL-SUSPENDED CARRIAGE

Ernat Vogeli, Zurich, Switzerland, assignor to Polio Establishment, Vaduz, Liechtenstein

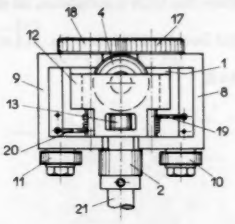
Filed Feb. 22, 1973, Ser. No. 334,954

Claims priority, application Switzerland, Feb. 23, 1972, 2579/72

Int. Cl. F16c *21/00*

U.S. Cl. 308—6 R **8 Claims**

A rail-suspended carriage for movable partition walls has a carriage body provided with an axle on which a pair of wheels are mounted which can engage a rail along which the carriage is to travel. Turnable guide rollers are provided, each being adapted to roll along a rail in lateral engagement therewith and each being turnable about a first vertical axis and the latter in turn being pivotable about a second vertical axis paralleling it. A track roller is turnable about another vertical axis laterally offset from and paralleling the first and second axis, and a motion-transmitting arrangement is provided which enforces pivotal movement of the first axis of one guide



roller about the second axis thereof in one direction, if the first axis of the other guide roller is pivoted about its second axis in an opposite direction, and vice versa.

3,829,176

STRETCHER-PULLEYS

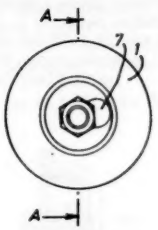
Stevan Miokovic, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, both of, France

Filed Apr. 19, 1973, Ser. No. 352,626

Claims priority, application France, Apr. 28, 1972, 72.15267

Int. Cl. F16c *35/00*; **F16h** *7/12*

U.S. Cl. 308—18 **4 Claims**



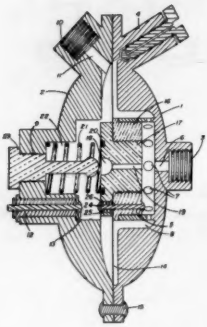
This stretcher-pulley associated with transmissions of internal combustion engines, comprises a roller mounted for loose rotation on a crankpin adjustable by pivoting about a fixed pin disposed eccentrically in relation to the crankpin axis under the control of resilient means constantly urging said roller against the belt to be stretched, characterised in that said crankpin is connected to the cylinder-block of the engine by means of a bearing base having substantially the same diameter as said roller and concentric thereto, said base having formed in its peripheral portion a hole in which the eccentric pivot pin rigid with the cylinder-block is fitted, a cavity being formed in said base for receiving said resilient means on the side of said base which engages said cylinder-block, an anchor stud extending through the axial portion of said crankpin, said cavity and an elongated orifice permitting the movements of said crankpin about its eccentric axis, said stud acting in actual service as a means for pressing the bearing surface of said crankpin base against said cylinder-block.

3,829,177

SECURITY DEVICE FOR BRAKING SYSTEMS

Jose D. Vergara, San Ismael No. 845 Jardine de la Preas; Adolfo Vergara, La Ryna No. 25 Col Chapalita, and Juan L. Zepeda, Marelos No. 1024 Guadalyana, all of Guadalajara, Mexico

Filed Dec. 12, 1972, Ser. No. 314,430
Int. Cl. B60t 15/46
U.S. Cl. 303—84 R 6 Claims



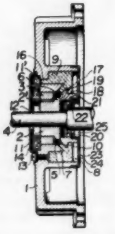
A security device for braking systems of the hydraulic type provides a signal to a driver indicating a presence of a small failure some place in the braking system and blocks a portion of the braking system where a major failure has occurred leaving the remaining portions of the system unchanged to permit safe driving of a vehicle without the complete failure of the braking system.

3,829,178

BEARING ARRANGEMENT

Hiroo Sakamoto, Tokyo, Japan, assignor to Akai Electric Company Limited, Tokyo, Japan

Filed Apr. 28, 1972, Ser. No. 248,405
Claims priority, application Japan, May 12, 1971, 46-31749
Int. Cl. F16c 1/24
U.S. Cl. 308—132 4 Claims



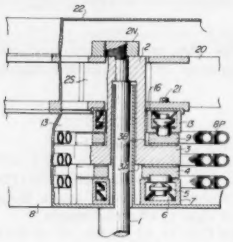
A bearing arrangement for continuously circulating lubricating oil to sleeve-type bearings of electric motors, in particular small horsepower electric motors, having a first oil-impregnated fibrous material member, which serves as a lubricant reservoir for the bearing, in contact with a part of the outer peripheral surface of the bearing, and a second absorbent fibrous material member arranged adjacent an end surface of the bearing so as to absorb lubricating oil escaping from the bearing journal. The first and second fibrous material members are connected directly with each other or through an additional absorbent fibrous material member in a circuitous fashion. Thus, the lubricating oil circulates through the completed capillary return path and performs lubricating and cleaning actions for long periods of time throughout the life of the motor without replenishment.

3,829,179

BEARING DEVICE FOR VERTICAL-SHAFT ROTARY MACHINES

Seiichi Kurita, Takahagi; Makoto Kaneko, and Mituo Iikawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1973, Ser. No. 337,367
Claims priority, application Japan, Mar. 3, 1972, 47-21517
Int. Cl. F16c 17/06
U.S. Cl. 308—160 17 Claims



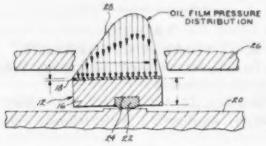
A bearing device comprising a bearing that supports the overall weight of the rotating parts of a vertical-shaft rotary machine and another associated rotary machine or machines and also bears downward thrust during operation, a bearing that controls radial displacement of the rotating parts, and a bearing that bears up-thrust, or a thrust acting in the direction opposite to the direction for the first bearing. Of these bearings, those for controlling the radial displacement and for bearing the up-thrust are disposed close to each other to permit a reduction in the overall shaft length of the rotary machines and make the machines as a whole small in size and compact in construction.

3,829,180

PAD CONSTRUCTION FOR TILTING PAD THRUST BEARING

Willis W. Gardner, Waukesha, Wis., assignor to Waukesha Bearings Corporation, Waukesha, Wis.

Filed Apr. 16, 1973, Ser. No. 351,682
Int. Cl. F16c 17/06
U.S. Cl. 308—160 12 Claims



A tilting pad for a thrust bearing is formed of steel and faced with a layer of graphite-fiber composite material. This provides good bearing properties, a low coefficient of thermal expansion parallel to its surface, and a low coefficient of thermal conductivity transverse to its surface. The facing material insulates the bearing pad from oil-sheer heat and thus increases the load capacity of the pad by reducing the tendency to bend which is customarily caused by a temperature differential

across a pad. The facing material is made of criss-crossed layers of graphite fibers embedded in a resin, the fibers being oriented in directions substantially parallel with the surface of the steel pad.

3,829,181

COMBINED AXIAL RADIAL BEARING

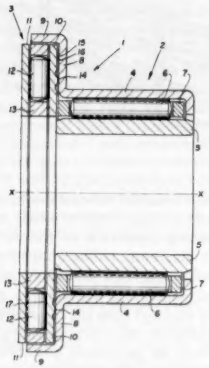
Fritz Gunther, Stuttgart-Rohr, and Hermann Fritz, Merklingen, both of Germany, assignors to SKF Industrial Trading and Development Company B.V., Overtoom, Amsterdam, Netherlands

Filed Mar. 12, 1973, Ser. No. 340,590

Claims priority, application Germany, Mar. 14, 1972, 7209652

Int. Cl. F16c *19/14*

U.S. Cl. 308—174 **6 Claims**



A combined axial-radial bearing comprising a housing having a cylindrical portion and a radially extending flange portion. An axial bearing is located in said flange portion, comprising an array of needle roller elements and a buffer disk interposed between the roller elements and the flange. The frontal face of the buffer disk lying in opposition to said flange is formed with camber means by which the disk is spaced from the flange and which permits angular movement therebetween.

3,829,182

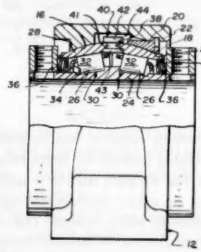
BEARING CONSTRUCTION

Hilarius S. Struttmann, St. Charles, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 21, 1973, Ser. No. 362,572

Int. Cl. F16c *23/08*

U.S. Cl. 308—194 **3 Claims**



A generally spool-shaped locking pin preferably constructed of a ductile metal in a two part outer race assembly for a self-aligning bearing assembly limits the relative rotation between race assembly and the housing receiving the same.

3,829,183

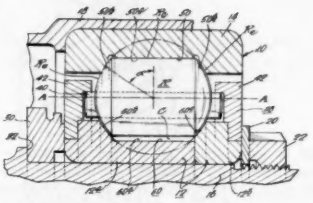
ULTRA HIGH SPEED ROLLING BEARING ASSEMBLY

Colin G. Hingley, Strafford-Wayne, Pa., assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed Jan. 17, 1973, Ser. No. 324,443

Int. Cl. F16c *33/00*

U.S. Cl. 308—213 **11 Claims**



A roller bearing assembly comprising inner and outer rings having confronting spaced apart raceways defining an annular space, a plurality of rolling elements in the annular space between said rings, said rolling elements and raceways being of a predetermined configuration providing for rotation of each of the rolling elements about a fixed axis and having a substantially fixed contact angle, said rolling elements being in line contact with the outer raceway and engaging axially spaced sections of the inner raceway and spaced from the inner ring surface between the inner raceway sections.

3,829,184

AUTOMATIC PLAV TAKE-UP BEARING BUSHES

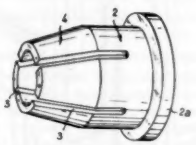
Remy Chevret, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Jan. 18, 1973, Ser. No. 324,595

Claims priority, application France, Jan. 26, 1972, 72.02583

Int. Cl. F16c *33/04*

U.S. Cl. 308—237 **6 Claims**



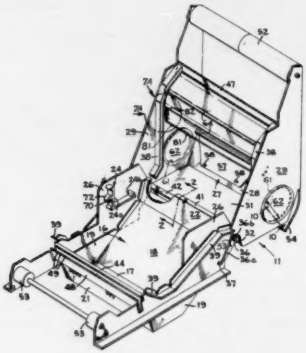
This bush-ring adapted to receive a trunnion of a low-load mechanism comprises a resilient portion adapted to undergo a radial distortion as a consequence of the pressure exerted at its end by the trunnion and a distortion-free portion, said resilient portion having a frustoconical section with at least three longitudinal slits which is adapted to be distorted by said trunnion and thus constitute two frustoconical sections having opposite tapers, of which the slip elements having a common base diverge and engage the bearing or trunnion associated therewith, the sections remotest from said stop flange diverging while remaining in bearing contact with said trunnion or bearing.

3,829,185

HOUSING ASSEMBLY FOR ELECTROSTATIC PRINTING MACHINE

William A. Lloyd, San Jose, Calif., assignor to Versatec, Inc., Cupertino, Calif.

Filed May 11, 1972, Ser. No. 252,425
Int. Cl. B65h *19/00*
U.S. Cl. 312—39 **9 Claims**



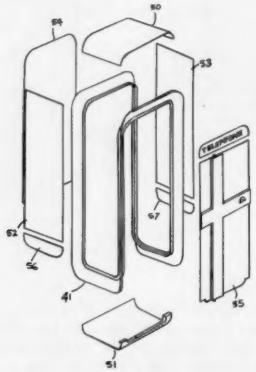
A housing assembly for an electrostatic printing machine features: a sealed chamber for storage of a supply of printing material in either fan-fold or roll form; means for tensioning a web of the material as it is fed to an electrostatic printing head; and a broad leaf member extending transversely of the bin assembly between a supply of fan-fold web material and the tensioned web itself as stretched out to the recording head so as to prevent rubbing contact therebetween.

3,829,186

DEMI-CUBIC STRUCTURES

Gerald L. Jonas, 306 W. 81 St., New York, N.Y. 10024

Filed June 25, 1973, Ser. No. 373,231
Int. Cl. A47b *43/00*
U.S. Cl. 312—100 **7 Claims**



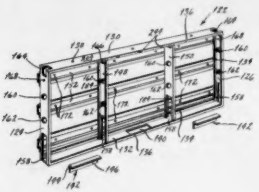
A method of constructing a container, having a demi-cubic frame and first and second panel sections adapted to cooperate with the frame, including flexing the demi-cubic frame in its basic directions of resilient flexure, assembling the first and second panel sections into cooperation with the frame and allowing the frame to return to its unflexed condition to retain the first and second panel sections in cooperation with the frame; and a container having a demi-cubic frame with two basic directions of resilient flexure; first and second panel sections retained in cooperation with the frame, the panel sections being retained in said cooperation only when the frame is in its unflexed condition.

3,829,187

COUNTER FIXTURE

Harry M. Stewart, 1130 Hampton Ave., St. Louis, Mo. 63139

Filed Mar. 23, 1972, Ser. No. 237,437
Int. Cl. A47b *96/18, 43/00*
U.S. Cl. 312—140.1 **13 Claims**



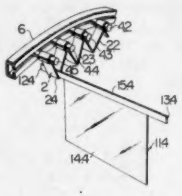
A counter fixture for financial transactions having a die, one or more cabinet members supported by a base member and a countertop with curbing supported by the die and cabinet members. The one or more cabinet members and base member are plumbed and leveled simultaneously prior to assembling the die and countertop thereto. The die when supported on the base is elevated from the floor surface and positioned adjacent the cabinets, thereby acquiring a plumbed and leveled condition from the previously plumbed and leveled base and cabinet members. The countertop being supported by aligned surfaces of the cabinets and the die is substantially plumbed and leveled upon assembly thereto.

3,829,188

CARD-STORING DEVICE

Takeshi Abe, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,492
Claims priority, application Japan, Jan. 25, 1972, 47-9237
Int. Cl. A47b *63/00;* **B42f** *15/00;* **A47b** *88/00*
U.S. Cl. 312—184 **5 Claims**



A device comprising support means including a pair of members bent in zigzag fashion for supporting in a number of valleys formed in the support means a number of aperture cards, microfiches or other information cards each having projections on opposite sides thereof. The cards are held in position by the biasing force of resilient means urging the zigzag support means into a contracted position by its biasing force. When any card is to be retrieved from among the cards stored in the device, a retriever is inserted in the zigzag support means to bring it into an expanded position whereby the desired card can be slightly pushed out and retrieved.

3,829,189
MOTORIZED MOBILE SHELVING APPARATUS

Marvin A. Staller, Fort Atkinson, Wis., assignor to Spacesaver Corp., Ft. Atkinson, Wis.

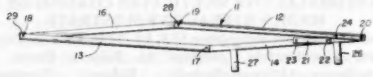
Filed Jan. 15, 1973, Ser. No. 323,681
Int. Cl. A47b *53/00, 77/00, 87/00*
U.S. Cl. 312—198 **6 Claims**

Mobile storage apparatus includes a plurality of mobile units guided for movement in a direction normal to the storage faces with each mobile unit having a separate motor. Switch actuator rods shiftable horizontally in each unit have a control arm projecting through the end panels of the units for manipulation. Manual movement of each actuator rod to the right or left causes actuation of right or left directional control switches to energize the motor for movement of the unit to the right or left. The actuator rods project beyond the side margins of each of the units to engage projecting parts of actuators on the adjacent units so that manual movement of the actuator rod in one unit causes movement of the actuator rods in adjacent units to energize the motors in all units for which the rod is shifted to open the selected aisle space.

3,829,190
CABINET PREFABRICATION SYSTEM

Alfred N. Jackson, 1005 20th St., Golden, Colo. 80401

Filed Oct. 19, 1972, Ser. No. 298,736
Int. Cl. A47b *43/00*
U.S. Cl. 312—258 **8 Claims**



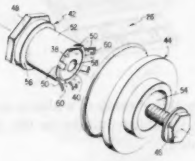
A cabinet system providing prefabricated support frame and cabinet liner components that are assembled at the point of manufacture with adjacent elements thereof being pivotally interconnected each to each whereby such components may be handled and shipped in a compact collapsed configuration. At points of use the frame and cabinet components which are hinged and folded in opposite directions are brought to an expanded erected condition for nesting engagement one within the other with the oppositely hinged orientation thereby providing a rigidly upright structure. Facing components are applied to complete an assemblage of cabinet units of various style and length.

3,829,191
MEANS FOR SEALING A COMPONENT SUPPORTING ASSEMBLY IN A WASHING APPLIANCE TUB

Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,516
Int. Cl. A47b *88/00*
U.S. Cl. 312—346 **3 Claims**

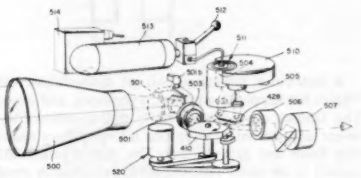
A roller assembly for front loading dishwashers employing a tub with a plastic interior surface includes a plastic roller mounting stud that seals tightly at its base with the tub surface. The roller mounting stud includes a means for sealing the stud to the tub wall including an integral, annular sealing ridge upstanding from the tub wall engaging end of the stud in surrounding relation to a central mounting bore for deforming and/or abrading the softer tub wall into fluid tight sealing engagement with the annular ridge. A plurality of the roller mounting assemblies are anchored in a common reinforcing channel member backing a metal collar adjacent the front open end of the dishwasher.



3,829,192
RECEIVE AND DISPLAY OPTICAL RASTER SCAN GENERATOR

Bryce A. Wheeler, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 152,466, May 28, 1971, Pat. No. 3,764,192. This application May 21, 1973, Ser. No. 362,593
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **9 Claims**



There is disclosed an optical scanning device optically free of both astigmatic distortion and image rotation which is thus suitable for use with an afocal magnifying system. The device detects infrared energy from a scene, converts the received signals into visible light output, and displays the scene to an observer through a unitary dual function scanning device, one of its functions being the conversion of infrared energy received in an azimuth-elevation scan pattern to electrical signals and the other function being the synchronous generation of a visible scene from said signals. The geometry of the device is such that both the elevation and azimuth scan in both modes appear to originate from a substantially fixed area thereby precluding astigmatic distortion when said scan is optically coupled to an afocal magnifying system.

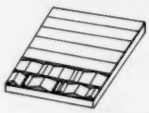
3,829,193
IMPROVED RANDOM PHASE PLATE FOR FOURIER TRANSFORM HOLOGRAPHY

Yoshito Tsunoda, and Yoshitada Oshida, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 18, 1972, Ser. No. 289,644
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **11 Claims**

A phase plate disposed in the object light beam path of a Fourier transform holography apparatus, has a phase surface on which a plurality of different continuous function shapes

distributed at random are formed. In this manner phase of the object light passing through each portion of the phase plate is

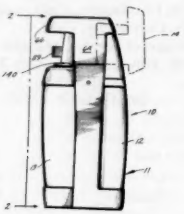


shifted continuously and at random within a range of from 0 to $2n\ \pi$. Thus, spectral maldistribution on the plane of a hologram can be prevented.

3,829,194
BINOCULAR

Gerrit A. Van Exel, Fullerton, and Alfred A. Akin, Jr., West Covina, both of Calif., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,918
Int. Cl. G02b 7/12
U.S. Cl. 350—76 **13 Claims**

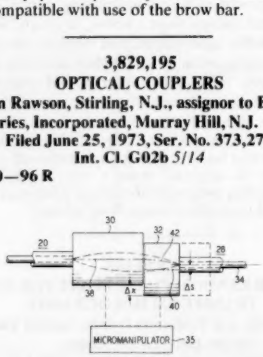


A binocular having a pair of monoculars with identical frames for supporting prisms, eyepieces, and objective lenses. The frames are coupled by a sliding connection to permit linear adjustment of eyepiece interpupillary spacing by a rotary knob and gear system. The mated monoculars are supported in an outer housing which eliminates need for a conventional storage case. A singed brow bar on the housing rests against the user's forehead to steady the binocular during viewing, and the brow bar covers the eyepieces when the binocular is not in use. Focussing is achieved by moving field lenses in the eyepiece optical systems to maintain a constant eyepoint compatible with use of the brow bar.

3,829,195
OPTICAL COUPLERS

Eric Gordon Rawson, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 25, 1973, Ser. No. 373,272
Int. Cl. G02b 5/14
U.S. Cl. 350—96 R **7 Claims**

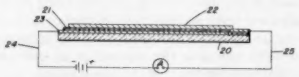


An optical coupler comprises at least two movable graded index-of-refraction cylindrical segments. At least two of the segments have unequal lengths and are longitudinally butted together to form a structure having flat input and output faces. The overall length of the segments approximates a half wavelength of the period of the sinusoidal path followed by a light beam in longitudinally propagating through the segments. A relatively large lateral movement of the segments, while maintaining the butting relationship, causes the image of a light spot directed at the input face of the coupler to move a relatively small distance over the output face thereof. The structure is suited, for example, to achieve a precise high-efficiency coupling between optical fiber ends to be spliced together. More generally, the coupling structure functions as a microdisplacement optical probe or optical beam redirector.

3,829,196
VARIABLE LIGHT TRANSMISSION DEVICE

Satyendra Kumar Deb, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 110,068, Jan. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 616,791, Feb. 17, 1967, abandoned, which is a continuation-in-part of Ser. No. 530,086, Feb. 25, 1966, abandoned. This application Apr. 10, 1973, Ser. No. 349,878
Int. Cl. G02f 1/36
U.S. Cl. 350—160 R **11 Claims**

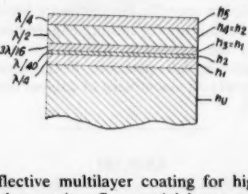


Variable light transmission device typically comprising a transition metal oxide layer sandwiched between a pair of electrode layers such as stannic oxide-coated glass and gold film. When an electric field is applied across the electrodes the device exhibits persistent coloration at ambient temperature.

3,829,197
ANTIREFLECTIVE MULTILAYER COATING ON A HIGHLY REFRACTIVE SUBSTRATE

Alfred Thelen, Am Sannaberg 553, FL-9495 Triesen, Furstentum, Liechtenstein, assignor to Balzers Patent Und Beteiligungs-Aktiengesellschaft, Balzers, Furstentum, Liechtenstein

Filed Oct. 18, 1972, Ser. No. 298,548
Claims priority, application Switzerland, Oct. 20, 1971, 015454/71
Int. Cl. G02b 1/10
U.S. Cl. 350—164 **2 Claims**



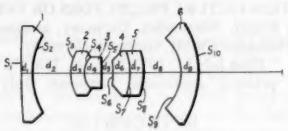
An antireflective multilayer coating for highly refractive glass material comprises five partial layers adjusted to one another as for their reflective indices and their optical thicknesses so as to obtain a vary favorable antireflection curve with a broad flat middle portion in the order of the desired, so-called reference wavelength. To this effect, the refraction index of the individual layers is provided, for the first and third layer, by 15 percent lower and, for the second and fourth layer, by 10 to 30 percent higher than the refractive index of the substrate and for the outer fifth layer lower than 1.5, and the optical thicknesses are provided, for the first and fifth layer one-fourth, for the second layer one-eightieth

to one-sixteenth, for the third layer one-eighth to one-fifth, and for the fourth layer one-half of the reference wavelength. The value of the refractive index of the fifth layer preferably approaches to the square root of the refractive index of the substrate.

3,829,198
WIDE ANGLE LENS SYSTEM

Yasuo Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 26, 1973, Ser. No. 345,147
Claims priority, application Japan, Mar. 27, 1972, 47-30456
Int. Cl. G02b *9/34*
U.S. Cl. 350—220 **1 Claim**



A wide angle lens system includes six consecutively designated successive lenses, the first lens being a negative meniscus lens with a front convex face, the second and third lenses forming a positive cemented doublet and being a negative meniscus lens with a front convex face and a positive lens with a front face of greater curvature than the rear face, the fourth and fifth lenses forming a cemented positive doublet with the fifth lens having very low power, and a negative sixth lens with a rear convex face. The lens system satisfies the following requirements;

$F/1.2 < F_1 < F/0.8$, $F_1 < 0$
$0.1 < n_2 - n_3 < 0.16$, $0.1F < r_4 < 0.15F$
$20 < \nu - 4\nu_5 < 24$, $0.0005 < n_4 - n_5 < 0.02$
$F/2.2 < F_{1.2.3.4.5} < F/1.6$
$0.2F < r_9 < 0.3F$, $r_9 < 0$

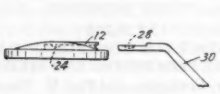
wherein

F is the focal length of the lens system;
N_i is the d-line refractive index of the ith lens;
$F_{1.2.\cdots i}$ is the combined focal length of the subsystem comprising the first to the ith lens;
ν_i is the Abbe's number of the ith lens; and
r_j is the radius of curvature of the jth surface, confronting cemented surfaces defining a single surface.

3,829,199
DISPOSABLE DENTAL MIRROR

Frank E. Brown, Glendale, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 18, 1972, Ser. No. 218,722
Int. Cl. G02b *5/08*; **A61c** *3/00, 19/00*
U.S. Cl. 350—308 **1 Claim**

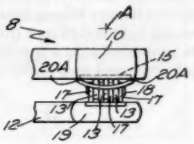


A disposable dental mirror comprises a plastic base adapted to hold a mirror thereon, the base having on its back side a receiving aperture to provide a removable frictional attachment between the base and a stem from a conventional dental mirror handle; and a mirror attached to the front surface of the base. The disposable mirror greatly minimizes cross-contamination between patients as it is inexpensive and may be conveniently discarded after use.

3,829,200
TEMPLE HINGE SPRING

Frank W. Lindblom, Warwick, R.I., assignor to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 124,293, March 15, 1971, abandoned. This application June 27, 1973, Ser. No. 373,974
Int. Cl. G02c *5/16*
U.S. Cl. 351—113 **4 Claims**

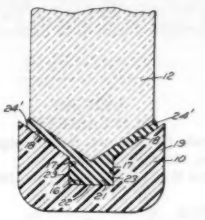


In a spectacle frame a leaf spring is incorporated in the vicinity of each hinge to engage the temples in such a way as to press the temples against the wearer and enable the spectacles to be worn more comfortably without slipping and to be more securely retained in position on the head of the wearer.

3,829,201
CUSHIONING MOUNT FOR A LENS IN THE RIM OF AN OPHTHALMIC MOUNTING

Harold F. Whiting, Attleboro, Mass., assignor to The Hilsinger Corporation, Plainville, Mass.

Filed June 28, 1973, Ser. No. 374,679
Int. Cl. G02c *5/00*; **G02b** *7/02*
U.S. Cl. 351—154 **3 Claims**



The rim of an ophthalmic mounting is lined with an elastomeric member which will resiliently mount the lens and will be maintained in a substantially hidden position, the mounting cooperating with the shaping of the lens rim so as to prevent the lens from being detached by pressure at an angle to the plane of the rim.

3,829,202
STEREOSCOPIC OPTICAL APPARATUS

William S. Liddell, P.O. Box 1533, Avalon, Calif. 90704

Continuation-in-part of Ser. No. 168,319, Aug. 2, 1971, abandoned. This application July 20, 1973, Ser. No. 381,173
Int. Cl. G03b *35/02*
U.S. Cl. 352—62 **22 Claims**

Stereoscopic optical apparatus including a composite viewing screen composed of numerous individual optical cells, each of which has a front wall in the form of an image-receiving screen and a back wall in the form of a retina device that is normally opaque but is responsive to invisible index or biasing light to be rendered locally transparent. Disposed behind the image-receiving screen is a viewer lens which focuses light on the retina device. Disposed behind the retina device is a source of image-transmitting light. An index light source in the form of right and left eye biasing light is provided for al-

ternately irradiating the respective right and left sides of the faces of viewers and the retina device is locally responsive to the biasing light to become locally transparent to form pupil areas for passage of image-transmitting light which is then directed to the viewer lens to illuminate a display image appearing on the image-receiving screen and be directed at one or the other of the eyes of respective viewers. Consequently, the right and left eye biasing light may be energized alternately and respective right and left eye display images alternately projected onto the image screen in synchronism with energization of such right and left eye biasing light. Accordingly, when the right eye biasing light is reflected from the right eye of a viewer, it will be projected along a right eye optical path to be focused on a right eye pupil area in the retina to render such

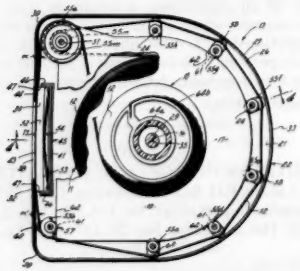
pupil area transparent to image-transmitting light to permit passage therethrough of image-transmitting light which will be transmitted in the reverse direction along such optical path to be focused on the right eye of such viewer. Alternately, when the left eye biasing light is energized and the left eye display image is imposed on the cell screen, such left eye biasing light will be reflected from the left eye of the viewer and along a left eye optical path to pass through the viewer lens and be focused on a localized area in the retina device to render such localized area transparent to image-transmitting light to form a pupil area and such image-transmitting light will be projected through the pupil area and in the reverse direction along the left eye optical path to be focused on the left eye of the viewer.

3,829,203

FILM CASSETTE

Warren D. Novak, Chappaqua, N.Y., assignor to The Mosler Safe Company, Hamilton, Ohio

Filed May 14, 1973, Ser. No. 360,360
Int. Cl. G03b *1/00*
U.S. Cl. 352—78 R **9 Claims**



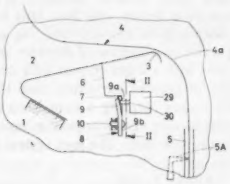
A film cassette of the type where the supply reel and the take-up reel are disposed in coaxial relation. After take-off from the supply reel, the film is directed substantially 360° about the inner periphery of the housing during which it is canted from the supply reel's plane to the take-up reel's plane, the film being exposed while in the same plane as the supply reel. This provides a long, gentle film path with no sharp bends. The guide pins which so direct the film after exposure are fixed, i.e., nonrotating, and are normal to the supply and take-up reels' planes. The majority of the guide pins each present a dish-shaped, inclined bearing surface over which the film passes, the bearing surface extending between the supply and take-up reels and progressing radially outward as it slopes from the supply reel's plane to the take-up reel's plane. This substantially eliminates contact of the film with the guide pins except on the extreme side edges and, in combination with the long, gentle film path, allows the film to seek its own path from the supply reel chamber to the take-up reel chamber. The cassette's cover wall is provided with a series of stub pins about its inner periphery adapted to be received in friction fit relation with axially struck cavities defined by the guide pins. This provides simple means to aid in establishing a light-tight housing.

3,829,204

SWITCH ACTUATING ARRANGEMENT FOR USE IN MOTION PICTURE PROJECTORS OR THE LIKE

Wolfgang Riedel, Winnenden, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed July 11, 1973, Ser. No. 378,373
Claims priority, application Germany, July 14, 1972, 2234602
Int. Cl. G03b *1/04*
U.S. Cl. 352—124 **20 Claims**



A motion picture projector wherein the film is transported from a supply reel to a takeup reel and forms a loop upstream of the gate. The concave side of the loop is adjacent to an elastic damping member which is displaced by the loop when the pull-down continues to advance the film toward the takeup reel after the supply of film on the supply reel is exhausted but the trailing end of the film remains attached to the core of the supply reel so that the tension of the film increases. The damping member then causes a trip to actuate a microswitch which arrests or reverses the motor for the pull-down. The trip actuates the microswitch when the tension of the film increases to a first value and thereupon maintains the microswitch in actuated condition as the tension of film increases, for example, due to inertia of moving parts of the film transporting mechanism. The resistance which the trip offers to movement with the damping member when the tension of film increases subsequent to actuation of the microswitch remains unchanged. The trip is reset to its starting position in automatic response to manipulation of a master switch which can reverse the motor for the pull-down.

3,829,205

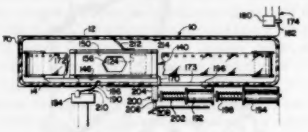
SENSING DEVICE FOR CONTROLLING MOTION-PICTURE PROCESSING AND VIEWING

Rogers B. Downey, Lexington, and Paul W. Thomas, Duxbury, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 227,083, Feb. 17, 1972, which is a continuation-in-part of Ser. No. 888,604, Dec. 29, 1969, Pat. No. 3,643,579. This application Apr. 20, 1973, Ser. No. 353,009
Int. Cl. G03c *11/00*
U.S. Cl. 352—130 **32 Claims**

An "information" providing and "sensing" apparatus or system for incorporation with a motion-picture film contain-

ing cassette and with a unit adapted to mount and function with the cassette after its previous mounting in a camera wherein the film had been exposed. The apparatus enables processing and subsequent viewing, i.e., projection of the film through a plurality of automatically controlled operations. The cassette includes certain self-contained means for processing the film with extreme rapidity. Both the cassette and mounting unit include elements cooperating with one



another to perform essential functions such as "predetermination" by the mounting unit whether the film is in an unprocessed or processed state when the cassette is first mounted therein; accomplishment of film processing if unprocessed; preliminary determination of the film location within the cassette, that is, its position either on the supply reel or the takeup reel; and projection and rewinding of the film. All of the foregoing are accomplished automatically.

3,829,206

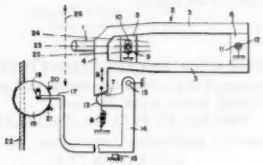
FILM PROJECTOR, ESPECIALLY FOR TEACHING MACHINES

Gerhard Soehring, 26 Unterer Burggarten, 6901 Dossenheim; Manfred Moessner, 14 Hebelstrasse, 6901 Eppelheim; Gerhard Kreutze, 2 Beethovenstrasse, 6901 Bammental, and Guenther Obstfelder, 26 Im Enkler, 6906 Leimen, all of Germany

Filed Mar. 7, 1973, Ser. No. 338,950

Int. Cl. G03b *21/46*

U.S. Cl. 352—160 **4 Claims**



A film projector, especially for teaching machines, which can be operated with a film provided with control marks. The control marks are associated with frames on the film and are preferably provided at the beginning of the film. When the film is running or a static image is being reproduced, vertical adjustment of the image can be effected reliably by hand or automatically by motor means to compensate for tolerances in the position of the perforations, and/or in the film transport. Film projectors of this type can be employed particularly advantageously in all cases where re-copied films are used and/or the film is transported by means of a claw.

3,829,207

SOUND RECORDING AND REPRODUCING DEVICE WITH VISUAL IMAGE MEANS

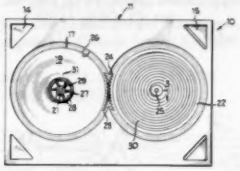
Gunars Licitis, Lombard, Ill., assignor to Marvin Glass & Associates

Filed Aug. 3, 1973, Ser. No. 385,281

Int. Cl. G03b *31/06*

U.S. Cl. 353—120 **4 Claims**

A sound recording and reproducing device to be used alone or in conjunction with photographs or similar still visual images. Both a sound recording or reproducing track and the still images are replaceable in order that a message or statement pertinent to the subject matter of a still image can be associated by the sound reproducing or recording track while at the same time permitting the device to be used with a plurality



of visual images and sound reproducing or recording tracks. The device comprises a frame for supporting the still images on one side thereof, a rotatable surface which supports the sound track, and a non-concentric rotatable spiral track to establish a locus for a recording or reproducing head.

3,829,208

COPYING APPARATUS

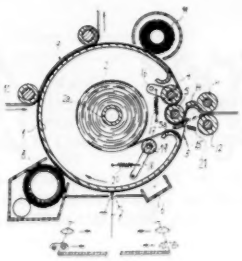
Henricus J. M. van Meijel, Venlo, and Martin L. van der Sterren, Horst, both of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Feb. 2, 1972, Ser. No. 222,916

Claims priority, application Netherlands, Feb. 11, 1971, 7101848

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **9 Claims**

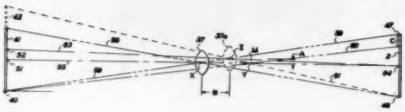


An apparatus for forming images on light-sensitive web material and transferring them to copying material comprises a rotatable slotted hollow drum having processing means disposed about its periphery and having the lightsensitive web material trained from a supply roll inside the drum over the outer surface of the drum to holding means in the slot of the drum, which means include means operable when the drum is in a rest position to displace the web material outwards and into engagement with fixed web propelling means so that, whenever desired, the drum may be stopped and a used length of the web material removed from its surface and replaced by a fresh length drawn from the supply roll. The material leading off the drum is severed by causing the propelling means or renewed drum rotation to tear it off, or by causing the same to draw it taut against a knife edge that cuts it off.

3,829,209
IMAGE REGISTRATION IN A MULTIPLE MAGNIFICATION PHOTOCOPYING SYSTEM

Gerald A. Buddendeck, and Herman L. Cox, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 152,134, June 11, 1971, abandoned.
This application Jan. 8, 1973, Ser. No. 321,627
Int. Cl. G03g 15/00
U.S. Cl. 355—14 19 Claims

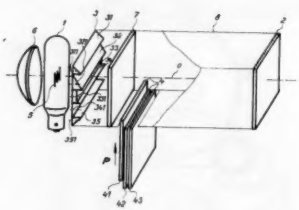


A xerographic machine with multiple magnification capabilities employs a multiple focus lens system designed to operate under fixed overall conjugate conditions. The lens system is supported for displacements along its optical axis to effect various magnifications and for displacements perpendicular to the optical axis to regulate the dimensions of the borders on the copies produced by the machine.

3,829,210
ILLUMINATING SYSTEM OF AN ENLARGER

Vojtech Langer, Prerov, and Emil Nesvadba, Rokytnice u Prerova, both of Czechoslovakia, assignors to Meopta, narodni Podnik, Preov, Czechoslovakia

Filed Dec. 7, 1972, Ser. No. 314,000
Claims priority, application Czechoslovakia, Dec. 10, 1971, 8602-71
Int. Cl. G03b 27/76
U.S. Cl. 355—35 7 Claims

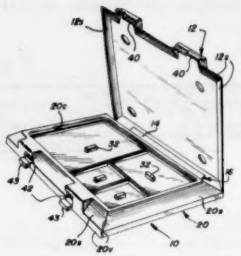


Illuminating system for a photographic enlarger for making color reproductions, consisting of a projection lamp with a spherical or an aspherical reflection mirror and of an enclosure for mixing colored light. The enclosure is provided with an input and an output ground glass window, between which a system of movable color correction filter is arranged. Between the projection lamp and the input window there is placed a dispersive optical assembly consisting of a system of optical prisms, whose optical axes are parallel with the axis of the illuminating system and perpendicular to the direction of movement of the color correction filters. The prisms are paired equidistant from the axis of the optical system, each pair having the same refractive power. A single prism is also provided, lying on the axis of the optical system, having a zero refractive power.

3,829,211
EASEL CONSTRUCTION

Robert W. Mitchell, 707 Myrtle Ave., St. Joseph, Mich. 49085

Filed Feb. 28, 1973, Ser. No. 336,884
Int. Cl. G03b 27/58
U.S. Cl. 355—74 17 Claims

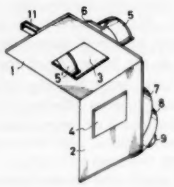


An easel construction for use in a darkroom and a method of using it which enables multiple exposures to be made on a single sheet of photographic paper in a series of simplified steps, the easel construction comprising a base, a plurality of interchangeable covers adapted to overlie one surface of the base and a lid or similar securing means for maintaining the covers in place over the base. A focusing target surface having delineated surface areas corresponding to the areas of the covers is formed on a second outer surface of the base. Prior to exposing areas of the photographic paper, the image to be printed is properly focused on a target surface area and the lense aperture adjusted, the easel is inverted and one or more corresponding areas of photographic paper retained on the opposite side are exposed after removal of an appropriate cover. The covers are uniquely configured to avoid double exposures and facilitate the desired print sizes and after complete exposure the entire sheet of sensitive paper is removed, chemically processed, and if desired, cut to form a plurality of individual prints.

3,829,212
PHOTOGRAPHIC ENLARGEMENT INSTRUMENT

Sigeru Okayama, Tokyo, Japan, assignor to Kabushiki Kaisha Medica, Tokyo, Japan, a part interest

Filed July 11, 1973, Ser. No. 378,243
Claims priority, application Japan, Mar. 16, 1973, 48-32261
Int. Cl. G03b 27/62
U.S. Cl. 355—75 11 Claims



There is provided a photographic enlargement instrument comprising a plate-like negative film carrier having a rectangular aperture corresponding to a frame size of a negative film, means for hanging the negative film carrier from a fluorescent lamp in such a manner that the fluorescent lamp is closely adjacent to said rectangular aperture of the negative film carrier, a tubular member connected to the negative film carrier to enclose the rectangular aperture and having an enlarging lense at the other end thereof, and means for shading the fluorescent lamp except a position where the fluorescent lamp faces rectangular aperture of the negative film carrier.

3,829,213

ARTPROOF METHOD FOR SEMICONDUCTOR DEVICES

P. Donald Payne, Chalfont, Pa., assignor to Mos Technology, Inc., Valley Forge, Pa.

Filed June 2, 1972, Ser. No. 259,016
Int. Cl. G03b 27/02
U.S. Cl. 355—79 15 Claims

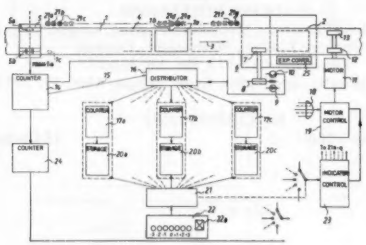
A method of checking the adherence to design rules, circuit configuration requirements and registration in artwork patterns to be used as masks in the fabrication of semiconductor devices, by forming a composite multicolor display of the artwork, before the masks have been made, wherein each pattern except one or more is presented in a unique color and the remaining pattern is represented by the absence of a color. The method includes contact printing a succession of artwork sheets on a base sheet, in registry with each other, each such sheet being printed in a unique color. In order to represent a selected artwork sheet by the absence of a color, a negative film copy is made of that artwork sheet and the copy is registered with another artwork sheet. The combination of the negative film copy and artwork sheet is then printed onto the base sheet in a selected color to form a subtraction image, i.e., only those portions of the artwork sheet which do not coincide with opaque areas on the negative copy are printed on the base sheet. This method of representing an artwork pattern by a missing color is particularly useful where the pattern represented by the missing color occurs, usually or exclusively, within areas of the pattern on another artwork sheet, as for example, where the pattern represented by missing color corresponds to a mask for cutting contact holes in MOS (metal-oxide-silicon) devices.

3,829,214

PHOTOGRAPHIC FILM COPYING APPARATUS

Wolfgang Zahn; Volker Weinert, both of Muenchen; Hans Thiene, Unterhaching, and Friedrich Hujer, Grunwald, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 13, 1973, Ser. No. 379,111
Claims priority, application Germany, July 15, 1972, 2234895
Int. Cl. G03b 27/78
U.S. Cl. 355—83 12 Claims



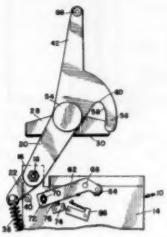
Film being transported along a predetermined path has marks indicating the position of each original. A plurality of originals is viewed in an inspection station positioned immediately prior to a reproducing station. A number of counters, at least equal in number to the number of originals in the inspection station, each furnishes a signal indicating the position of the corresponding original relative to the reproducing station. Associated with each counter is a storage for storing correction values for the original. The correction values are entered by the operator into the storage after viewing of the original in the inspection station. The original the corresponding storage means of which are connected to the input for receiving the correction signals is indicated by indicator lamps positioned along the path of the film within the inspection station. When the associated counter furnishes a signal signifying that the original has arrived at the reproducing station, the value stored in the corresponding storage is transferred to the automatic exposure control, thereby controlling the exposure of the associated original.

3,829,215

FLASH COPIER

Louis A. Smitzer, San Diego, and Jurgen Amtmann, Del Mar, both of Calif., assignors to Ovonic Image Systems, Inc., San Diego, Calif.

Filed May 8, 1972, Ser. No. 251,022
Int. Cl. G03b 27/04
U.S. Cl. 355—113 1 Claim



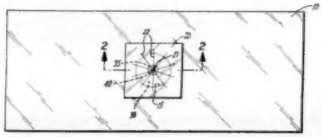
A flash copier for making duplicate copies of microfiche cards or the like by a contact printing technique. The unit has a housing containing a high intensity flash lamp to illuminate a window on which the original transparency and a sensitized card or film are placed. A platen mounted on a double hinged arm assembly is lowered onto the window and clamped by cam action in a continuous motion. Clamping pressure is closely adjustable to ensure high definition of copy, and the flash lamp is controlled by a switch which is actuated only at the locked position of the clamping cam mechanism.

3,829,216

OPTICAL SYSTEM AND METHOD FOR COUNTING SPERM CELLS

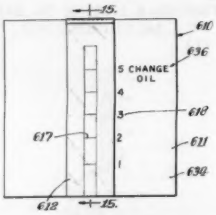
Maxim D. Persidsky, 35 Temiscal Ter., San Francisco, Calif. 94609

Continuation-in-part of Ser. No. 779,179, Nov. 26, 1968, abandoned. This application Oct. 2, 1972, Ser. No. 293,992
Int. Cl. G01n 1/28; G02b 21/34
U.S. Cl. 356—36 11 Claims



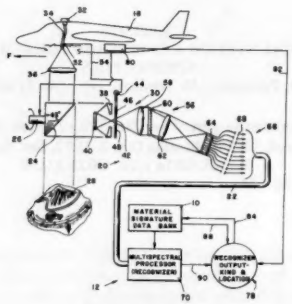
Optical apparatus and method for counting sperm cells in a shallow chamber under a microscope. The chamber is formed in a microscope slide and covered by a cover slip provided with reference lines to facilitate counting of the cells.

3,829,217
OIL CONDITION INDICATOR
Charles A. Johnson, Box 179, Lemmon, S. Dak. 57638, and Albert L. Kimmel, Kansas City, Mo., assignors to said Johnson, by said Kimmel
Continuation of Ser. No. 144,863, May 19, 1971, abandoned.
This application Apr. 9, 1973, Ser. No. 349,642
Int. Cl. G01n 33/28
U.S. Cl. 356—70 1 Claim



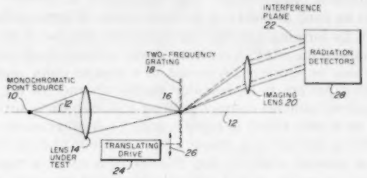
Means for indicating the condition of engine lubricating oil including a pair of relatively movable members defining therebetween a progressively increasing-in-thickness space for holding a sample of the oil. At least one of the members is made to be light-transmitting and indicium means are associated with the indicator for correlation with the progressively increasing opacity of the oil sample to provide an oil indicating condition to the user viewing the oil sample in the indicating means.

3,829,218
METHOD OF SPECTRAL ANALYSIS
Edward J. Alyanak, Mishawaka, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed June 5, 1972, Ser. No. 259,636
Int. Cl. G01j 3/38
U.S. Cl. 356—74 8 Claims



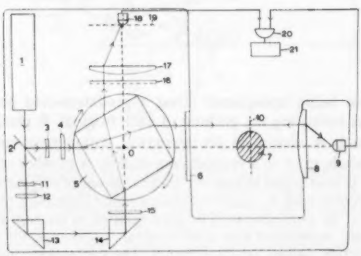
A method of simultaneously locating and identifying a plurality of materials within a field of view by comparing the spectral characteristics obtained from systematically scanning the field of view with known spectral signatures of the same materials stored in a memory bank. The number of times a known material is identified as being in the field of view is recorded and referenced to a base. The spectral signatures in the memory bank are continually updated in response to spectral conditions obtained from scanning the field of view.

3,829,219
SHEARING INTERFEROMETER
James C. Wyant, Carlisle, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Mar. 30, 1973, Ser. No. 346,365
Int. Cl. G01l 9/02
U.S. Cl. 356—107 25 Claims



A shearing interferometer for producing a shearing interferogram of a wavefront being converged to a focal point. In a first embodiment in which the wavefront is comprised of monochromatic radiation, two diffraction gratings having slightly different line spacings are placed near the focal point of the wavefront. The diffraction gratings produce two first diffraction orders at two slightly different angles which result in a shearing interferogram in the region of overlap. The resulting shearing interferogram yields wavefront information in one direction. Complete wavefront information in two directions may be obtained by shearing the wavefront in two orthogonal directions. This is accomplished by placing two additional diffraction gratings having slightly different line spacings near the focal point of the wavefront and in an orthogonal direction relative to the first two diffraction gratings. In a second embodiment in which the wavefront is comprised of white light, a blazed diffraction grating is introduced into the interferogram. Both the monochromatic and white light interferometers may use heterodyning, real time phase detection. When heterodyning phase detection is used, the irradiance of the interferogram is modulated sinusoidally by translating sideways at least one of the diffraction gratings.

3,829,220
GAUGING DIMENSIONS
Geoffrey John Parkinson, Stapleford, England, assignor to T. I. (Group Services) Limited, Birmingham, England
Filed Mar. 16, 1973, Ser. No. 342,277
Claims priority, application Great Britain, Mar. 17, 1972, 12494/72
Int. Cl. G01b 11/04
U.S. Cl. 356—160 15 Claims



A profile gauge in which two beams are scanned in unison, one of them being scanned in a parallel manner across an ob-

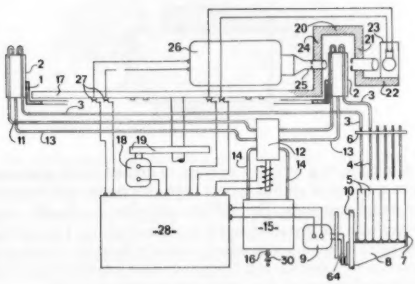
ject being measured and producing a profile signal in a first light detector, and the other being scanned in a parallel across a diffraction grating which transmits light that produces a pulsed measuring signal in a second light detector, one pulse being produced for each line spacing interval of the grating traversed by the second beam and these measuring pulses being produced continuously during scanning so as to permit direct measurement of the width of the object by summing those pulses occuring when the first beam is interrupted by the object. Preferably, the second beam is a monochromatic beam and an additional diffraction grating is provided in the path of said second light beam before it is scanned across the first grating so that diffraction of the light in both gratings causes a first order diffraction spot to be focussed onto a detection plane, which spot is used to produce said pulsed measuring signal. Further, the two light beams are preferably scanned by the same scanning means which comprises a parallel sided block of regular cross-section which is rotated about an axis through its centre parallel to its sides and which refracts the beams directed normal to its axis of rotation.

3,829,221

APPARATUS FOR AUTOMATICALLY MEASURING THE LIGHT TRANSMISSION FACTOR OR LIQUID TEST SAMPLES

Michel Ossona de Mendez, La Saulsaie, 91310 Montlherg; Michel Jean-Marie Dupuy, 11 Ave. Albert Thomas, 93190 Livry-Gargan; Roland Charreton, 90 Rue du Chemin Vert, 75011 Paris, and Albert Foucard, 40 Chemin de Meaux, 93220 Gagny, all of France

Filed Feb. 26, 1973, Ser. No. 335,890
Claims priority, application France, Feb. 29, 1972, 72.6802
Int. Cl. G01n *21/22; G01j 3/46*
U.S. Cl. 356—201 **31 Claims**



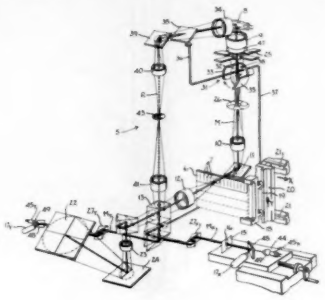
An apparatus for automatically measuring the light transmission factor of liquid test samples in which a number of transparent vats is arranged around the circumference of a stationary table over which rotates a photoelectric measuring device which successively scans each vat to determine the light transmission factor of the samples. The various samples are automatically transferred by sucking them into the measuring vats from a bank of test tubes via a bank of probes with flexible hose connections to each vat; a central control valve drains the vats after testing. Electronic timing circuits provide the control commands for the operative sequences of the device, and logic circuitry, in combination with a data storage and retrieval system, provides comparative data between reference measurements and sample measurements for each vat.

3,829,222

DEVICE TO INTRODUCE AN OPTIC MEASURING INDEX AT PHOTOELECTRIC DETECTION OF PHOTOGRAPHIC PLATES

Nils Robert Dahr Aslund, Johanneshov, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Mar. 26, 1973, Ser. No. 344,644
Claims priority, application Switzerland, Mar. 27, 1972, 3917/72
Int. Cl. G01n *21/22*
U.S. Cl. 356—203 **9 Claims**



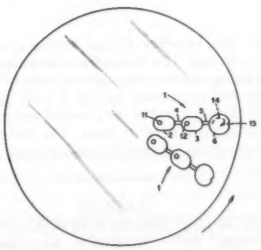
Density variation across a localized area of a photographic plate is detected by directing a beam through said area and thence onto a photoelectric detector through a narrow slot at the imaging plane. Relative motion is effected between the beam and the slot, hence detector output varies with density across the scanned zone. A fiducial mark carrier is in a separate beam (preferably emanating from the same source) which follows a path in bypass relation to the plate but which is combined with the image carrying beam at the slot. Light filters in the respective beams enable separate electronic processing of image beam signals and fiducial mark beam signals.

3,829,223

MIXING ROTOR FOR FAST ANALYZER OF ROTARY CUVETTE TYPE WITH MEANS FOR ENHANCING THE MIXING OF SAMPLE AND REAGENT LIQUIDS

Stephen D. Hamel, Oak Ridge, Tenn., assignor to The United States of America as represented by the Secretary of the United States Atomic Energy Commission, Washington, D.C.

Filed July 20, 1973, Ser. No. 381,297
Int. Cl. G01n *1/10, 21/24*
U.S. Cl. 356—246 **2 Claims**



A rotor design which provides improved mixing of sample and reagent liquids in a fast photometric analyzer of the rotary cuvette type is described. According to the preferred embodiment, one or more ramp-like projections are provided along the wall of each sample analysis cuvette to enhance mixing.

3,829,224

MASKING FLUID APPLICATOR

George Kloosterhouse, 804 Braeburn Dr., Tantallon, Md. 20022

Filed May 29, 1973, Ser. No. 364,292
Int. Cl. A45d *33/00*
U.S. Cl. 401—130 8 Claims

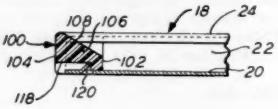
A masking fluid applicator comprising, a hollow elongated barrel with masking fluid therein, an elongated applicator in the barrel with a free end portion, means on said free end portion to retain only an amount of masking fluid on the free end portion of the applicator sufficient to mask a character of type or print or the like, and means in the barrel so constructed and arranged as to limit application of said masking fluid only to the free end portion of said elongated applicator.

3,829,225

LOOSELEAF BINDER

Billy J. Doolittle, Springfield, Mo., assignor to Litton Business Systems, Inc., Springfield, Mo.

Filed Feb. 28, 1972, Ser. No. 230,005
Int. Cl. B42f *13/00*
U.S. Cl. 402—17 6 Claims



A flexible post looseleaf binder having compression slides slidable in a channel. The channel end stops for preventing the slides from being removed through the ends of the channel are provided by end caps each having a body portion which is pressed into the open end of the channel and which is substantially permanently latched in place. The end caps also shield the sharp ends of the channel to prevent injury to the user.

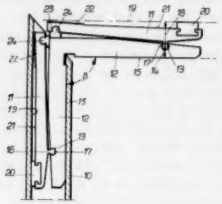
3,829,226

CONNECTOR ASSEMBLIES FOR HOLLOW MEMBERS

Ulrich Kreusel, 6551 Wolfsheim Kreuznacher Str. 16, Wolfsheim, Germany

Filed Apr. 13, 1972, Ser. No. 243,623
Claims priority, application Austria, Apr. 13, 1971, 3116/71
Int. Cl. F16b *7/00*
U.S. Cl. 403—295 17 Claims

A connector assembly for fixed angular attachment of two hollow elements such as tubes or to another element such as a frame comprises two pressure members pivotally connected intermediate their ends for relative movement about a transverse axis and adapted for axial introduction together into said hollow element, one of the members having a large area pressure surface for slidable and bearing engagement with one internal surface of the associated hollow element while the other member is adapted to engage an opposite internal surface of



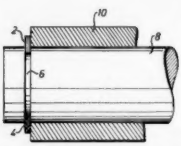
the associated hollow member, the other of the members being so constructed and arranged as to be energized by lateral pressure during axial introduction in to the hollow element for providing means resiliently biasing said members into engagement under pressure with opposite internal surfaces of said hollow element. The energization may be effected by shaping the other member as a resilient beam, or by providing resilient bodies between the members.

3,829,227

LOCKING AND SEALING DEVICE

Karl Gustav Einar Derman, Partille, Sweden, assignor to Forsheda Ideutveckling AB, Varnamo, Sweden

Filed Nov. 9, 1972, Ser. No. 305,107
Claims priority, application Sweden, Nov. 12, 1971, 14477/71
Int. Cl. F16b *21/18*
U.S. Cl. 403—377 3 Claims



A locking ring having a number of arched metal segments and a number of arched rubber segments positioned between the metal segments. The rubber segments are fixedly connected with the metal segments by vulcanization. The locking ring when in mounted position is axially fixed in at least one direction to a surface and being resiliently expandable and/or compressible against the action of the rubber material.

3,829,228

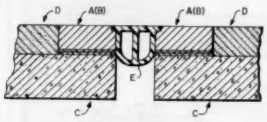
PAVEMENT EXPANSION JOINT AND JOINT SEAL

Norihiko Miyazaki; Minoru Ishii, both of Tokyo; Hiroji Sakurai, Nishikasugai; Hisao Suzuki; Katsuyoshi Nagatsuma, both of Tokyo, and Hitoshi Furukawa, Hirakata City, all of Japan, assignors to Nihon Kogyo Co., Ltd., by said Miyazaki; Ishii Civil Engineers Consulting Inst. Ltd., both of Tokyo, by said Ishii; Asahi Kasei Kogyo K.K., Osaka, by said Sakurai; Nihon Polymer Co., Ltd., by said Suzuki; Hitachi Cable, Ldt., both of Tokyo, by said Nagatsuma and Ciba-Geigy (Japan) Ltd., Osaka, all of, Japan, by said Furukawa

Filed Dec. 27, 1971, Ser. No. 212,548
Int. Cl. E01c *11/12*
U.S. Cl. 404—68 8 Claims

A new pavement expansion joint is provided by applying a mixture of epoxy mortar and an aggregate consisting essen-

tially of short glass fibers and silica sand to steel sheets bonded with an easily strippable adhesive capable of forming a bond of high tensile strength. The steel sheets are positioned at the bottom of a frame forming a pavement expansion joint corner. The epoxy mortar is allowed to cure in the joint corner forming a expansion joint of high impact strength. The readily strippable nature of the adhesive makes the joint corner easily replaceable. The removal of the joint can be facilitated by the



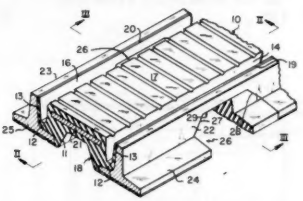
insertion of an adhesively attached rubber pad between the epoxy layer and a steel sheet or pair of sheets. This Expansion Joint is also easily repaired or reconstructed with a prefabricated expansion joint. Noise by a vehicle passing over the joint can be reduced by positioning a specially designed elastic joint seal between the expansion joints, the joint seal being characterized by spaced apart projections or protuberances extending above the exposed surfaces of the juxtapositioned expansion joints.

3,829,229

BENDABLE ELASTOMERIC EXPANSION JOINT

James E. Britton, Akron, and John A. Welch, Cuyahoga Falls, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Mar. 16, 1973, Ser. No. 341,834
Int. Cl. E01c *11/02*
U.S. Cl. 404—69 **7 Claims**



An elastomeric expansion joint is provided which can be bent around corners. An elastomeric body has a main body portion with bearing surface in which a central, preferably planar reinforcing member is at least partially embedded to resist vertical movement of the joint under load, and a pair of opposed longitudinal spacer portions along opposite sides of the main portion in which longitudinal reinforcing members are at least partially embedded. Said longitudinal members, which are preferably "T" or "L" shaped, have through base portions thereof at least one pair of oppositely positioned recesses for bending of the expansion joint.

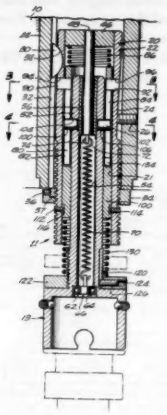
3,829,230

TAPPING ATTACHMENT ADAPTED FOR NUMERICAL CONTROL

Allan S. Johnson, Newport Beach, Calif., assignor to Topmatic Corporation, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 124,020, March 15, 1971, Pat. No. 3,791,756, and a continuation-in-part of Ser. No. 26,894, April 4, 1970, Pat. No. 3,717,892. This application Dec. 1, 1972, Ser. No. 311,296
Int. Cl. B23g *3/00*
U.S. Cl. 408—14 **7 Claims**

The invention is a tapping attachment of a type having free axial float and automatic depth control. The attachment embodies precise adjustment means for precisely adjusting or controlling the point at which the depth control will release. The depth control includes releasable engagement members movable relatively axially to release. The control means comprises an adjustable limiting member which precisely controls or limits the amount of inward positioning of the driven part of



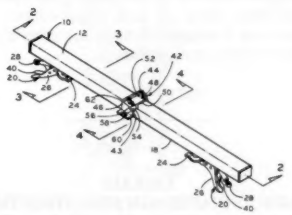
the engagable means relative to the driving part and thereby sets the amount of outward relative movement of the driven part which will cause release. The adjustable limiting means embodies a spring to insure against damage occurring to the attachment in the event the tapping element should encounter the absence of a hole to be tapped.

3,829,231

TOOL FOR GRIPPING AND PERFORMING WORK OPERATIONS ON BUILDING MATERIALS AND THE LIKE

Thomas Hamilton, 4619 Northern Pk., Monroeville, Pa. 15146

Filed Aug. 4, 1972, Ser. No. 278,182
Int. Cl. B23b *47/28*; B26d *1/10*
U.S. Cl. 408—108 **7 Claims**



A tool consists of a mounting member having adjustable grips which attach to the construction material and a carriage having a working tool is then movable relatively to the clamped construction material to perform work operations at selected locations. The clamps are adjustable within a bar or channel and once adjusted to the correct position within the channel and further adjusted relatively to the size of the construction material, the clamps are fixed in place and the channel is held fast. The carriage having a tool such as a drill, cutting blade, rip saw, etc. mounted on the carriage is then caused to slide back and forth on the channel to make selected working operations at given locations and the construction material can be plywood, studs, sheet goods and the like.

3,829,232

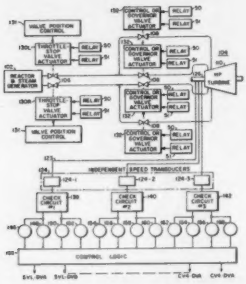
SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE WITH DUAL HYDRAULIC INDEPENDENT OVERSPEED PROTECTION ESPECIALLY ADAPTED FOR A NUCLEAR REACTOR POWERED STEAM TURBINE

James M. Fieglein, Clifton Heights, and Michael Csanady, Jr., Ridley Park, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1971, Ser. No. 189,322

Int. Cl. F01k *7/16*

U.S. Cl. 415—1 **10 Claims**



In a steam turbine an overspeed protection system and method is provided which operates completely independently of the conventional steam valve controller or governor. Existing hydraulically actuated valves such as stop valves, governor valves, interceptor valves, etc., are deactivated by draining hydraulic control fluid from the aforementioned through the action of specially provided dump valves. A pair of dump valves is provided for each of the steam flow valves.

Three turbine speed sensing transducers operating independently provide signals which are translated through three corresponding check circuits into related overspeed check signals. The three resulting check signals relating to overspeed are translated through majority switching logic into two dump valve trip signals. Each set of such trip signals operates one of the pair of dump valves on each steam control valve. The dump valves and hydraulic oil tanks are carefully protected from damage and any malfunction.

3,829,233

TURBINE DIAPHRAGM SEAL STRUCTURE

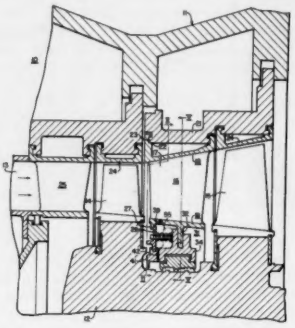
Augustine J. Scalzo, Philadelphia, and Kent G. Hultgren, Secane, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 27, 1973, Ser. No. 373,849

Int. Cl. F01d *11/00*; **F02** *11/00*

U.S. Cl. 415—110 **5 Claims**

A seal arrangement for a bladed diaphragm of an axial flow fluid machine, such as a gas turbine, that reduces leakage past the diaphragm blades. A seal housing ring is supported from diaphragm segments by radially movable keys, thus permitting relative motion between the diaphragm segments and the seal assembly. An upstream circumferentially disposed wall of the housing is held compressed in frictional contact with a radially inward flange of the diaphragm. The housing is supplied with a coolant fluid which is allowed to escape around the seals. The escaping coolant fluid prevents hot working fluid from entering this housing. The upstream wall of the housing is held in a compressed state by a spring. This spring permits relative sliding movement between the diaphragm and the seal housing, while controlling leakage of the motive fluid into the cooling fluid.



3,829,234

MOUNTING FOR A STATOR BLADE ADJUSTING CYLINDER ON AN AXIAL COMPRESSOR

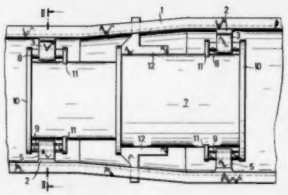
Hans Benz, Winterthur, Switzerland, assignor to Brown Boveri-Sulzer Turbomachinery, Ltd., Zurich, Switzerland

Filed July 3, 1973, Ser. No. 376,165

Claims priority, application Switzerland, July 13, 1972, 10516

Int. Cl. F04d *29/52*; **F16m** *9/00*

U.S. Cl. 415—138 **5 Claims**



The adjusting cylinder is mounted in the casing to move axially while radial movements are compensated for by allowing the cylinder to move radially relative to the casing in a controlled plane. The mounting includes a cylindrical guide rod in a bearing block on one side and a flat surfaced support bar in a support on the opposite side. The support bar is able to slide axially and radially of the casing within the support.

3,829,235

TURBOCHARGER COMPRESSOR WITH DUAL COLLECTOR CHAMBERS

William E. Woollenweber, Jr., Indianapolis, Ind., assignor to Wallace-Murray Corporation, New York, N.Y.

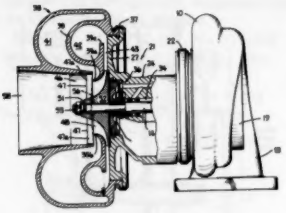
Filed Nov. 26, 1971, Ser. No. 202,136

Int. Cl. F04d *17/06*, *29/42*, *29/58*

U.S. Cl. 415—143 **1 Claim**

Disclosed is a single stage, centrifugal compressor component of a turbocharger for an internal combustion engine in which the vanes of the compressor wheel are formed to provide frontal vane portions extending radially beyond the adjoining vane portions. An internal wall of the compressor

wheel cover forms two discrete chambers or passages, one accommodating air flow induced by the radially extending vane



portions, the other accommodating flow induced by the adjoining vane portions. Heat exchange may occur across the wall between the two air flow paths.

3,829,236

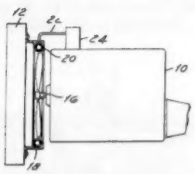
VARIABLE PUMPING SYSTEM FOR A PROPELLER FAN

Alastair S. MacLennan, Farmington, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 249,989, May 3, 1972, Pat. No. 3,760,779. This application June 8, 1973, Ser. No. 368,391

Int. Cl. F04d *25/12, 27/00*

U.S. Cl. 415—156 **5 Claims**



An inflatable rubber tube is attached to the interior of a fan shroud for the cooling fan of a reciprocating engine where the tube surrounds the rotation envelope of a fan. A temperature sensing mechanism deflates the tube to increase the clearance space of the fan and thereby decrease pumping efficiency when engine temperature is below its normal operating level. The temperature sensing mechanism inflates the tube to increase pumping efficiency if engine temperature rises above its normal operating level.

3,829,237

VARIABLY POSITIONED GUIDE VANES FOR AERODYNAMIC CHOKING

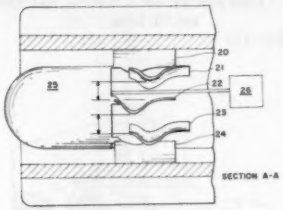
David Chestnutt, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 27, 1972, Ser. No. 266,820

Int. Cl. F02k *11/00;* **F01d** *1/02, 9/00*

U.S. Cl. 415—181 **7 Claims**

A choking device to cause a sonic barrier to be formed which reduces the transmission of noise in a direction opposed to the direction of air flow in a compressor that may be part of an aircraft gas turbine engine. The noise reduction is accomplished by proper shaping and movement of inlet guide vanes, and an actuator is connected to selected guide vanes to effect



movement thereof by programmed amounts as required to choke or partially choke within the design range of the axial-flow-air compressor.

3,829,238

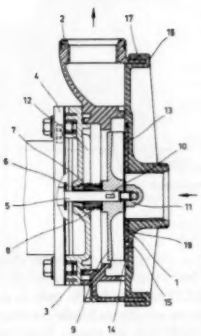
CENTRIFUGAL PUMPS COMPOSED PRIMARILY OF PLASTIC COMPONENTS

Walter Speck, D-8543, Heuberg 42, Germany

Filed Aug. 10, 1972, Ser. No. 279,375

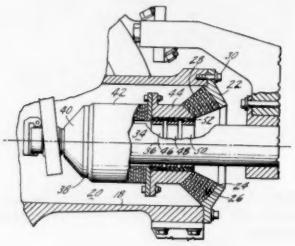
Int. Cl. F04d *7/00, 7/02*

U.S. Cl. 415—197 **2 Claims**



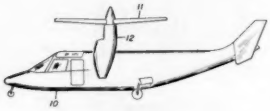
A centrifugal pump composed primarily of plastic components. The pump has a wall formed with an inlet through which liquid is sucked into the pump. A rotary impeller is coaxial with the inlet and located closely adjacent to the latter wall. This wall carries a wear-resistant disc which has an exposed surface directed toward and located closely adjacent to the impeller, defining a narrow gap therewith. Part of the wear-resistant disc is embedded in the housing wall, which is made of plastic, in such a way that part of the plastic material of the wall is situtated between the embedded portion of the disc and a plane which contains the exposed surface of the disc.

3,829,239
MULTIPLE ELEMENT JOURNAL BEARING
Robert C. Rybicki, Trumbull, and Carl H. Keller, Jr., Southport, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 21, 1973, Ser. No. 334,335
Int. Cl. B64c 27/38
U.S. Cl. 416—134 4 Claims



Journal bearing structure utilizing a plurality of cylindrical journal bearing elements supported by a resilient mounting within a housing, the bearing elements being spaced apart axially a finite amount.

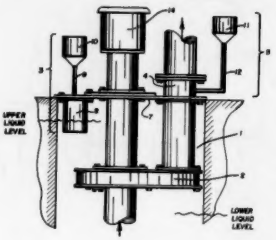
3,829,240
ADVANCED GEOMETRY MAIN ROTOR BLADE
Harry K. Edenborough, Dallas; Kenneth G. Wernicke, Hurst, and George D. Carter, Fort Worth, all of Tex., assignors to Textron Inc., Providence, R.I.
Filed May 17, 1971, Ser. No. 143,850
Int. Cl. B64c 27/06
U.S. Cl. 416—223 7 Claims



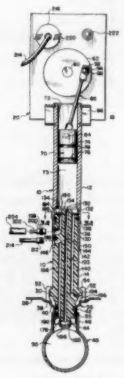
A rotor blade for a convertiplane characterized by twist rate which is nonlinear but monotonic from blade root to blade tip and by camber nonlinear from blade root to provide a lift due to camber which decreases from blade root to an intermediate point along the length and increases from said intermediate point to blade tip.

3,829,241
LIQUID LEVEL CONTROL
George B. Emeny, 575 Highland Ave., Salem, Ohio 44460
Filed Aug. 25, 1972, Ser. No. 283,750
Int. Cl. F04b 49/00
U.S. Cl. 417—17 1 Claim

A liquid level control for the operation of a sump pump or the like intermittently removing liquid from a sump or pit. The control starts the pump when the liquid level reaches a preset high level which pumps until the liquid reaches a preset low level. The control comprises a first switch which closes in response to the liquid crossing the preset upper level and a second switch preferably in parallel therewith which closes in response to the liquid moving through the pump such that when the first switch starts the pump, the second switch maintains the pump in the on position.



3,829,242
PISTON PUMP FOR SOFT SERVE MACHINE
Gene S. Duke, East Moline, and Lawrence E. Heatherly, Green Rock, both of Ill., assignors to H. C. Duke & Son, Inc., East Moline, Ill.
Filed Dec. 4, 1972, Ser. No. 311,685
Int. Cl. F04b 49/00, 21/02, 39/10
U.S. Cl. 417—38 25 Claims



A single piston positive displacement pump for confectionery products is disclosed wherein the mix and air are drawn into a cylinder simultaneously through separate passages past one-way valve members and displaced directly or indirectly into the freezing chamber by the piston through a common conduit controlled by a sleeve type one-way check valve. The pump and valve action draws the mix and air into the cylinder on one side of the piston and discharges a uniformly aerated mixture with reduced air bubble size into the freezing chamber to produce a smoother, tastier product without the necessity of extensive mechanical blending in the freezer and with increased freezing efficiency.

3,829,243

POROUS CONDUCTIVE CERAMIC ELECTRODES FOR CORROSIVE LIQUID METAL CONDUCTION PUMP

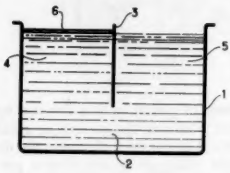
Henri Carbonnel, Antony, and Robert Borie, Sceaux, both of France, assignors to Groupement Atomique Alsacienne Atlantique, Le Plessis-Robinson, France

Filed Dec. 21, 1972, Ser. No. 317,495

Claims priority, application France, Dec. 22, 1971, 71.46210

Int. Cl. H02k *45/00*; **B23p** *17/00*

U.S. Cl. 417—50 **9 Claims**



Improvement to conduction pumps for corrosive liquid metals in which the conductive coil in its entirety or only the electrodes of that coil placed in contact with the corrosive liquid metal flux are constituted by a porous conductive ceramic substance impregnated after annealing of the said liquid metal. Impregnating is obtained by immersion in a hot bath of that liquid metal above which is arranged a metallo-alkaline fluoride bath.

3,829,244

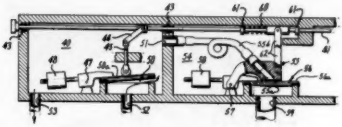
AUTOMATIC SEQUENCING HIGH VACUUM MECHANICAL VALVE SYSTEM AND APPARATUS

Allyn C. Miller, 1950 Barbara Dr., Palo Alto, Calif. 94303

Filed May 10, 1973, Ser. No. 359,207

Int. Cl. F04b *19/24*; **F04f** *9/00*

U.S. Cl. 417—53 **10 Claims**



A mechanical roughing vacuum pump and a high vacuum pump of the diffusion or similar type are interconnected to a high vacuum chamber and an intermediate isolation chamber. Valves are located within the chambers and are coupled with novel mechanical interlocks which provide for automatic operation of the valves by the pressure differential in the chambers and produce proper sequencing of the pumps to effect a high vacuum.

3,829,245

GAS WELL EQUIPMENT

O. T. Evans, P.O. Box 47, Beech Grove, Ky. 42322

Filed Aug. 22, 1973, Ser. No. 390,621

Int. Cl. F04f *1/18*; **E21b** *21/00*

U.S. Cl. 417—108 **10 Claims**

A purge pipeline for use in purging a natural gas productive formation of water is characterized, such as through including fittings, by having in the wall thereof at each of a plurality of locations spaced apart from one another longitudinally of the pipeline, a pair of first and second localized wall portions opposing one another across the interior of the pipeline, the localized wall portions being relatively erosion resistant as compared with adjacent regions of the pipeline, the first localized wall portions having apertures therein directed into the interior of the pipeline toward the second localized wall portions in the pairs for natural gas supplied under pressure from a natural gas productive formation and entering the apertures to produce jets impinging upon the second localized wall portion within the pipeline and have the gas delivered in the jets promote flow of water through the pipeline from the natural gas productive formation. Fittings for purge pipelines to be so characterized are also provided.

3,829,246

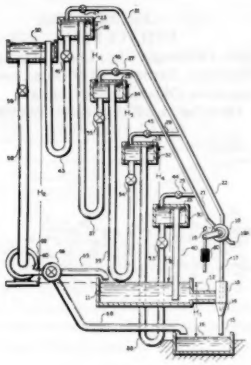
SYSTEM FOR RAISING AND USING WATER

Bruce Jay Hancock, 1643 W. Sixth Ave., Mesa, Ariz. 85202

Filed Jan. 22, 1973, Ser. No. 325,900

Int. Cl. F04f *1/06, 3/00, 5/00*

U.S. Cl. 417—121 **9 Claims**

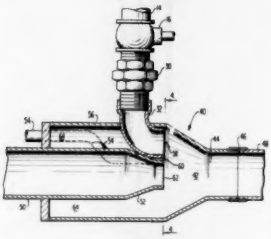


Using a primary head of water, e.g., from natural source and flowing the water by gravity through an aspirator, a vacuum is produced which is utilized to lift a part of the water from the same source through multiple stages to any desired elevation. The stages may be operated in alternating sequence by selective connection to a common aspirator. Alternatively, by use of multiple aspirators two or more stages may be operated simultaneously for continuous flow. A series of reservoirs arranged with limited elevational differences are connected selectively to the suction line of a water-driven aspirator. The water may be stored temporarily in an elevated reservoir, from which it may be withdrawn to generate power and/or for other uses.

3,829,247
JET EJECTOR DEVICE

Russel B. Edmonson, 318 Central Ave., Houma, La. 70360

Continuation of Ser. No. 125,608, March 18, 1971, abandoned. This application June 12, 1973, Ser. No. 369,158
Int. Cl. F04f 5/48, 5/44
U.S. Cl. 417—182 3 Claims



A device for removing oil field waste material from storage tanks is presented. The storage tanks are equipped with a gravity discharge drain, and may have internal sprayers to flush the waste material from the tank. The discharge drain is connected to a mixing chamber interior to a jet ejector pump. Water under high pressure enters the pump chamber through a converging nozzle, and exits the chamber through a conical constriction at the discharge port. The passage of the water through the chamber creates a partial vacuum therein which draws air through a vent and the waste materials from the tank, into the chamber, which materials are then entrained in the water stream. The waste materials carried by the water stream then jet from the chamber through a pipe connected to the discharge port to a disposal site.

3,829,248
UTILITY PUMP

Hugh H. Bright, Oklahoma City; Lee W. Davis, Del City, and Frank J. Stanaszek, Bethany, all of Okla., assignors to Little Giant Corporation, Oklahoma City, Okla.

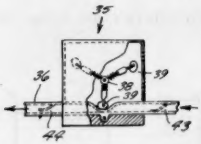
Filed Jan. 4, 1973, Ser. No. 320,985
Int. Cl. F04b 35/04
U.S. Cl. 417—410 8 Claims

A self-priming pump assembly including motor means with a rotatable drive shaft extending therefrom and pump mounting means secured to the motor means with the drive shaft extending therethrough. A pump unit is demountably secured to the pump mounting means and includes an interchangeable pump cam with a pair of identical interchangeable pump cam with a pair of identical interchangeable wear plates disposed at each end thereof within a pump housing. A flexible vane impeller is secured to the drive shaft within the pump cam and between the wear plates. The pump housing has inlet and outlet fittings integrally formed therewith. The pump assembly is conformed such that it may be completely disassembled while the pump housing is left in assembled relation with the inlet and outlet fittings thereof connected to external inlet and outlet conduits.

3,829,249
PORTABLE SYPHONIC PUMP

Reedy Thomas Pursley, 5512 Hardingway, Caledonia, Ohio 43314

Filed May 2, 1973, Ser. No. 356,624
Int. Cl. F04b 17/00
U.S. Cl. 417—411 4 Claims

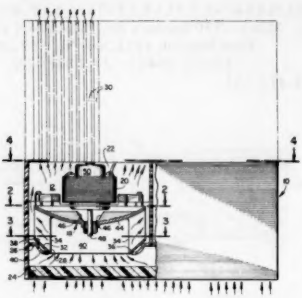


A handy pump of portable type for use by a motorist to transfer gasoline from one automobile to another in case one vehicle has run out of gas on a highway; the device consisting of hoses inserted into each of the vehicle gas tanks, and the outer ends of the hoses being connected to a pump that can be either hand operated or motor-driven by electric power from the vehicle cigarette lighter.

3,829,250
BLOWER ASSEMBLY

Wilfred Joseph Samson, Jr., West Hartford, Conn., assignor to Torin Corporation, Torrington, Conn.

Continuation of Ser. No. 182,753, Sept. 22, 1971, abandoned. This application Jan. 31, 1973, Ser. No. 328,376
Int. Cl. F04b 17/00
U.S. Cl. 417—424 10 Claims



A blower assembly comprising a housing with inlet and discharge openings in opposite sides. A backward curved blower wheel is mounted in the housing with a driving motor adjacent the circular inlet opening and provides a seal against reverse air flow with an annular ring on the wheel. The discharge opening is larger in area than the inlet and a resulting straight through flow occurs at a relatively low velocity and sound level but in an air stream of relatively broad cross section.

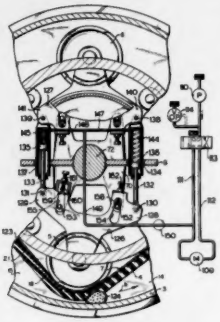
3,829,251
SQUEEZE PUMPS FOR DELIVERING CONCRETE

Friedrich Schwing, Rathausstrasse 126, 468 Wanne-Eickel, Germany

Filed Feb. 8, 1972, Ser. No. 224,425
Claims priority, application Germany, Feb. 11, 1971, 2106554; Feb. 11, 1971, 2106560
Int. Cl. F04b 43/08, 43/12, 45/06
U.S. Cl. 417—477 7 Claims

A squeeze or peristaltic pump for delivering concrete in which the concrete is transported along a cylindrical segment

with an elastic squeeze member and squeeze rollers rolling thereon. The rollers are mounted on a rotor revolving in a housing, in which said squeeze member consists of a flat, rubber elastic belt defining a squeeze chamber, together with a rigid outer wall curved in accordance with the cylinder segment, and two parallel walls perpendicular to the outer wall.



The belt is constrained at its ends and held tight in all rolling phases without elastic over stretch and has a longitudinal reinforcement and a transverse reinforcement of mutually parallel cross bars. The elastic rubber material surrounds the reinforcements and is concentrated on the inside of the squeeze pin.

3,829,252

SEALING ARRANGEMENT FOR AN AIR COMPRESSOR

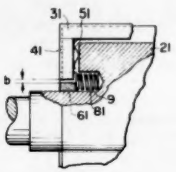
Masao Nakano, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Ikuta-ku, Kobe-Shi, Hyogo, Japan

Filed Mar. 20, 1972, Ser. No. 235,999

Claims priority, application Japan, Mar. 20, 1971, 46-19171; Dec. 9, 1971, 46-115781

Int. Cl. F04c *21/00*

U.S. Cl. 417—482 **8 Claims**



Vanes of an air compressor rotor are provided with end seals and an axially extending peripheral seal. A cylindrical sealing member is positioned at the radially innermost end of each end seal to engage therewith. The cylindrical sealing member and the end seals are urged outwardly by springs. The end seals extend radially outwardly to the outer periphery of the peripheral seal to seal the outer ends of the peripheral seal which normally has a tolerance to allow for thermal expansion.

3,829,253

PLATE VALVE STRUCTURE

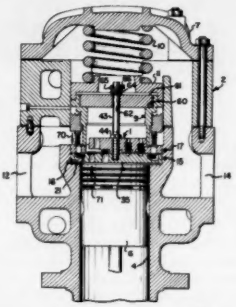
Stuart E. Bunn, and Herbert B. Owsley, both of P.O. 388, Shawnee Mission, Kans. 66201

Filed Dec. 27, 1972, Ser. No. 318,893

Int. Cl. F04b *49/00*

U.S. Cl. 417—504 **8 Claims**

A plate valve structure, for mounting in a compressor recess, in which thin discs or plates are positioned between a base plate and a cover plate overlying and selectively closing flow passages through the base plate and cover plate in response to pressure differentials acting thereon. Spring members urge the valve plates to seating position until a predetermined pressure differential is attained. The spring members for each plate or mounting thereof have different characteristics and the lift spaces are different providing a differential in preloading and a differential in opening lift for controlling the opening sequences and speeds of the respective plates and cushioning the shock of seating impact. The plate valve structure includes a retaining ring resiliently mounted thereon for separating intake and exhaust flow streams in the compressor.



3,829,254

PUMP FOR CONCRETE AND THE LIKE

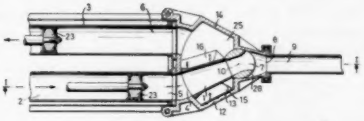
Georg Stetter, Strigelstrasse 5, 894 Memmingen, and Eberhard Pieper, Zimmerplatzstrasse 19, 8941 Buxheim, both of Germany

Filed Oct. 24, 1972, Ser. No. 300,360

Claims priority, application Germany, Oct. 26, 1971, 2153204

Int. Cl. F04b *7/00, 15/02*

U.S. Cl. 417—517 **6 Claims**



A pump for concrete, cement, or like fluent medium having two oppositely-acting piston/cylinder units which alternately feed the fluent medium from a hopper to a delivery conduit. A pivotal tube is used to connect the discharge ends of the cylinders in turn to the delivery conduit.

3,829,255

DEVICE FOR CONTROLLING THE CAPACITY OF RECIPROCATING COMPRESSOR

Alexandr Vasilievich Bykov, ulitsa Dimitrova, 19, kv. 106; Vsevolod Sergeevich Scherbakov, Konkovo-Derevlevo, korpus 7v, kv. 120; Lev Alexandrovich Sudarkin, ulitsa Metallurgov, 7/18, kv. 56, all of Moscow, U.S.S.R., and Roman Vladimirovich Pavlov, deceased, late of Moscow, U.S.S.R. (Tatyana Viktorovna Goglina, administrator)

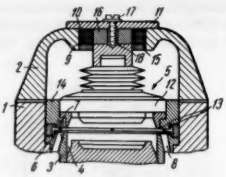
Filed Dec. 29, 1972, Ser. No. 319,399

Int. Cl. F04b *39/08*

U.S. Cl. 417—559 **4 Claims**

A device for controlling the capacity of reciprocating compressor contains a compressor casing with a cylinder head and

a cylinder disposed in said casing and provided with discharge and suction valves. The suction valve is controlled by an elec-



tromagnetic coil arranged on the exterior of the compressor casing with the electromagnetic coil being connected to the suction valve by a flux guide.

3,829,256

DISPLACEMENT MACHINE

Heinrich Guttinger, Wettingen, Switzerland, assignor to Agin-for AG fur industrielle Forschung

Filed Dec. 6, 1972, Ser. No. 312,479

Claims priority, application Switzerland, Dec. 10, 1971, 18082/71

Int. Cl. F04c *1/02*

U.S. Cl. 418—5 **8 Claims**

A displacement machine comprising a displacement chamber subdivided into at least two series connected consecutively arranged chamber sections. Each of the chamber sections is bounded by an outer and an inner substantially cylindrical jacket sector and by two substantially planar closure surfaces. A displacement device is arranged to carry out a revolving movement and has a respective substantially cylindrical sector-shaped vane located in each of the chamber sections of the displacement chamber. Each of the vanes has longitudinal edges and curved surfaces, each of said vanes, independently of its momentary position and during the course of the revolving movement, contacting by means of said longitudinal edges the planar closure surfaces and at least with one of its curved surfaces the associated cylindrical jacket sector of the associated chamber section along a contact line. Each of the chamber sections of the displacement chamber and each of the vanes of the displacement device span an angle of at least 270°, and that a chamber section and the therein arranged vane is angularly shifted with respect to the next connected chamber section and its vane by the complement of said span angle for 360°.

3,829,257

ROTARY FLUID ENGINE

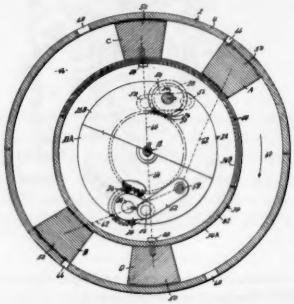
Dan H. Goering, Shawnee, Kans., assignor to Peterson Machine Tool, Inc., Merriam, Kans., a part interest

Continuation-in-part of Ser. No. 189,676, Oct. 15, 1971, abandoned. This application Dec. 22, 1972, Ser. No. 317,792

Int. Cl. F01c *1/00*

U.S. Cl. 418—36 **7 Claims**

A rotary fluid engine consisting of a cylindrical housing having a normally fixed sun gear mounted axially therein, a hollow piston carrier mounted for axial rotation in the housing and divided intermediate its ends into two independently rotatable sections, and defining an annular chamber in conjunction with the housing, each section of the carrier fixedly supporting a pair of diametrically opposite pistons each filling the cross-sectional contour of the chamber, a flywheel disposed rotatably within the hollow carrier and directly connected to the power output shaft of the engine, the housing having inlet and exhaust ports for admitting fluid under pressure into the chamber between diametrically opposite pairs of



pistons to urge the associated pistons in relatively opposite directions, and exhaust ports for exhausting the fluid from the chamber after a pre-determined motion of the pistons, a pair of planetary gears meshed with the sun gear at diametrically opposite points and carried rotatively by the flywheel, and a crank and link arrangement connectingeach planetary gear to one of the sections of the connecting each so arranged that fluid pressure in opposite directions on the pistons associated with either inlet port is operative to act through the planetary gears to turn said fly-wheel and power output shaft in a single direction.

3,829,258

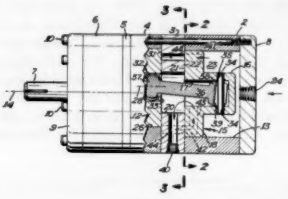
HIGH PRESSURE GEROTOR TYPE HYDRAULIC MOTORS

Wayne B. Easton, 17591 Kilmer Ave., Eden Prairie, Minn. 55343

Continuation of Ser. No. 670,962, Sept. 27, 1967, abandoned. This application May 14, 1971, Ser. No. 143,618

Int. Cl. F01c *1/02*

U.S. Cl. 418—61 B **14 Claims**



This invention relates to hydraulic motors of the type which utilizes a rotary piston gear set, known as a gerotor, for forming expansible and contractible chambers. The invention resides in a valving and fluid passage arrangement wherein a rotating or orbiting valve is disposed in a fluid inlet chamber to which pressurized fluid is admitted. The pressurized fluid in the chamber forces the valve into sealing engagement with a valve block which has passages through which pressurized

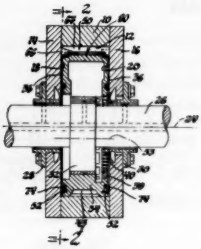
fluid is admitted to the expansible chambers. The fluid exhaust passages are arranged in the valve and valve block in a manner such that the engaging surfaces of the valve and valve block are the only relatively movable surfaces which separate the pressurized inlet fluid from the depressurized outlet fluid.

3,829,259

COMBINATION APEX AND CORNER SEAL SPRING FOR ROTARY ENGINE

Gene P. Baynes, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 21, 1973, Ser. No. 371,976
Int. Cl. F01c *19/04*
U.S. Cl. 418—121 **3 Claims**



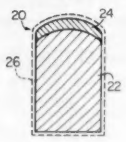
A single spring biases both a two-piece apex seal and two corner seals at each corner of a rotor in a rotary combustion engine so that the apex seal continuously engages the engine's inwardly facing peripheral wall and the corner seals continuously engage the engine's oppositely facing end walls.

3,829,260

WEAR-RESISTANT METAL OBJECT AND A METHOD FOR THE MANUFACTURE THEREOF

Yasunori Shimoda, Tachikawa, Japan, assignor to Nissan Motor Company Limited, Yokohama City, Japan

Filed June 30, 1972, Ser. No. 267,978
Claims priority, application Japan, Aug. 3, 1971, 46-58577
Int. Cl. C23c *9/14*; **F01c** *21/00*; **F04c** *29/00*
U.S. Cl. 418—178 **7 Claims**



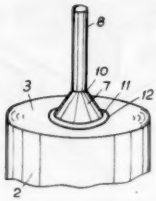
Herein disclosed is an improved wear-resistant metal object and a method for the manufacture thereof. The metal object is formed by spraying fine particles of a nickel-chrome based self-fluxing alloy onto a surface of a base metal for forming a coating of the alloy on at least a portion of the surface of the base metal. The coating is usually fused so as to have the particles of the self-fluxing alloy interlocked with each other and strongly bonded to the base metal. Where desired, the resultant object is subjected to a soft-nitriding process for forming a nitrided hardened layer on the resultant object. The metal object thus produced has an increased resistance to wear and abrasion and is adapted for use in operations in which sliding movements occur in severe conditions as in the case of an apex seal of a Wankel rotary engine.

3,829,261

APPARATUS FOR ISOSTATIC HOT PRESSING OF POWDER

Hans-Gunnar Larsson, and Carl Bergman, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Division of Ser. No. 297,648, Oct. 16, 1972, Pat. No. 3,777,877. This application May 2, 1973, Ser. No. 356,486
Claims priority, application Sweden, Oct. 14, 1971, 13011/71
Int. Cl. B30b *5/02*
U.S. Cl. 425—78 **7 Claims**



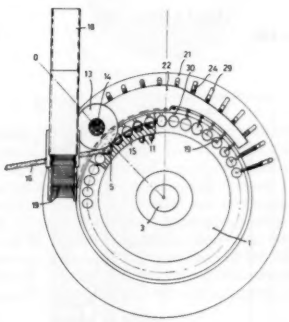
In isostatic hot pressing of powder in a collapsible container, the powder is enclosed in a container which is provided with one or more evacuation openings, and a conical support is held in position adjacent the evacuation openings. A funnel-shaped body of sheet metal is secured above the support and the evacuation openings by welding its edge to the wall of the container. The body is evacuated through a suction tube connected to the funnel and the tube is sealed. Thereafter the container is subjected to heat and pressure, and the funnel-shaped member collapses into engagement with the conical support.

3,829,262

APPARATUS FOR FORMING LOLLIPOPS

Conrardus Hubertus Aquarius, Kanaalstraat 13 Weert, Weert, Netherlands

Filed Oct. 24, 1972, Ser. No. 299,699
Claims priority, application Netherlands, Oct. 27, 1971, 7114779
Int. Cl. A23g *7/00*
U.S. Cl. 425—126 S **3 Claims**

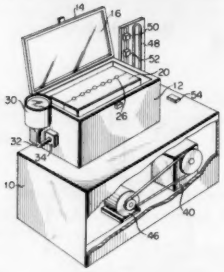


The invention disclosed is an apparatus for forming lollipops which apparatus is substantially characterized in that means which serve lumps from a sugar string consist of a pressure roller which is freely rotatable in the plane of cavities of the moulding drum and which is mounted on a shaft which is parallel with the axis of the moulding drum, and in that the flat periphery of the roller, in cooperation with opposite longitudinal edges of the cavities, severs lumps which are pushed into the cavities.

3,829,263
APPARATUS FOR REDUCED PRESSURE CASTING OF SYNTHETIC RESINS

Ching-Chun Yao, and Hitoshi Tsuchiya, both of Tokyo, Japan, assignors to Rion Kabushiki Kaisha, Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,064
Int. Cl. B29c *6/00*
U.S. Cl. 425—145 **1 Claim**

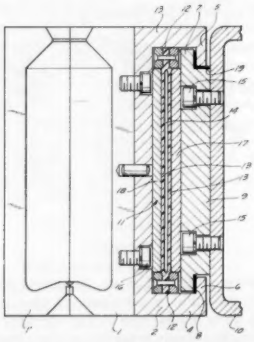


Workpieces to be encapsulated are put in place within cavities of a plastic mold one for each cavity. A container in which the mold is disposed is evacuated to a predetermined reduced pressure. At that time a liquid mixture of a snythetic resin and its hardener at room temperature begins to be sucked into the cavities to fill them. When the mixture escapes from the cavities through their escaping ports, the mixture supply is disconnected and the mold returns to the surrounding pressure. Then the resin solidifies into solids each encapsulating the individual workpiece.

3,829,264
MOLDING APPARATUS

Reinhold Mnilk, Dortmund-Wickede; Manfred Kurreck, Bochum Weitmar, and Ulrich Geltenpoth, Dortmund-Wickede, all of Germany, assignors to Holstein & Kappert, Maschinenfabrik Phonix GmbH, Dortmund, Germany

Division of Ser. No. 176,403, Sept. 13, 1971, Pat. No. 3,782,879. This application Dec. 22, 1972, Ser. No. 317,650
Claims priority, application Germany, June 9, 1971, 2128561
Int. Cl. B29c *1/00*
U.S. Cl. 425—149 **9 Claims**

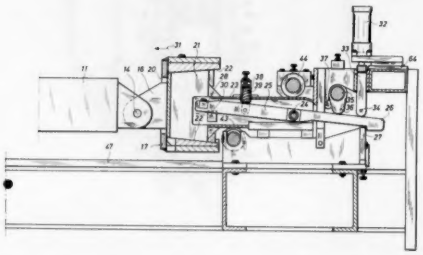


A molding apparatus for thermoplastic material has a mold including two relatively movable mold sections. One or both of the mold sections are mounted on carriers for movement relative to the other, and adjusting means in form of springs or in form of superimposed fluid-tightly connected plates defining with one another a compartment which is extensible by pressure fluid, is interposed between at least one of the mold sections and its associated carrier so that the mold sections can be adjusted relative to one another and aligned in parallelism. A control arrangement, controlling operation of the mold, is associated with the latter.

3,829,265
DEVICE FOR CONNECTING AND DISCONNECTING CORE TUBES TO A TROLLEY IN CONCRETE CASTING MACHINES

Jens Christian Holm, Hellerup, Denmark, assignor to A. Jespersen & Son International A/S, Copenhagen, Denmark

Filed Sept. 28, 1972, Ser. No. 293,197
Int. Cl. B28b *7/30*
U.S. Cl. 425—161 **21 Claims**



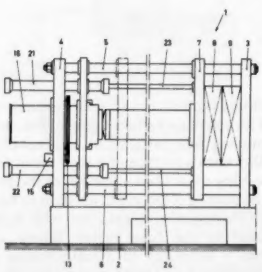
From US Pat. No. 3,642,419 it is known to pervey a concrete casting machine with more core tubes than necessary for a single mold. Therefore at each casting a number of core tubes are retained, while the other core tubes are moved on a trolley towards and into the empty mold.

Now the said core tubes are retained in their most retracted position by means of twin-arm levers , engaging either a fix hook in a link member connected to the core tube; this gives a reliable connecting and disconnecting possibility which is vastly automatically controlled.

3,829,266
INJECTION MOLDING MACHINE

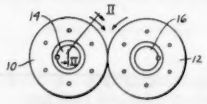
Robert Melcher, Gerlingen, Germany, assignor to Siemag Siegener Maschinenbau G.m.b.H., Hilchenback-Dahlbruch, Germany

Filed Jan. 31, 1973, Ser. No. 328,465
Claims priority, application Germany, Feb. 10, 1972, 2206305
Int. Cl. B29f *1/00*
U.S. Cl. 425—192 **4 Claims**



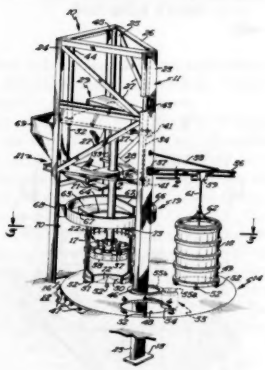
An injection molding machine in which the mold halves are brought together by a first means and the clamping pressure is brought about by a second, separate means.

3,829,267
BRIQUETTING APPARATUS AND DIE MEMBER ARRANGEMENT THEREFOR
Bruce C. Woodward, Greensburg, Pa., assignor to Kennamental Inc., Latrobe, Pa.
Filed Oct. 31, 1972, Ser. No. 302,516
Int. Cl. B29c 3/02
U.S. Cl. 425—237 9 Claims



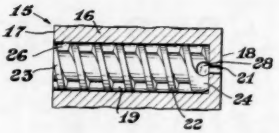
A briquetting arrangement in which two wheels in opposed relation rotate in opposite directions and have die members mounted about the peripheries thereof with cavities formed in the die members in which material fed between the rotating wheels is compacted into briquettes. The die members are formed of a hard wear resistant material such as cemented tungsten carbide and are detachably mounted on supporting block members which are, in turn, fixed to the peripheries of the respective wheels.

3,829,268
CONCRETE PIPE MACHINE WITH TRIANGULAR FRAME
John Patrick Gill, Nashua, Iowa, assignor to Hydrotile Machinery Company, Nashua, Iowa
Filed Mar. 15, 1973, Ser. No. 341,492
Int. Cl. B28b 3/12
U.S. Cl. 425—262 17 Claims



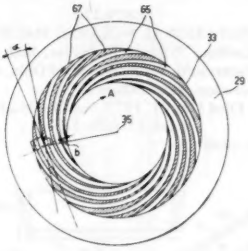
A packer head concrete pipe machine operable to make a cylindrical concrete pipe in an upright mold. The machine has a triangular frame assembly formed with three upright frame members fixed to each other with cross braces. A rotatable turntable has a center hole for accommodating one of the frame members. The turntable carries three molds and is sequentially rotated to move the molds in longitudinal alignment with the packer head and a cylindrical core having vibrating units. Three hydraulic cylinders function to move the packer head longitudinally of the mold during formation of the pipe. The core follows the packer head through the pipe.

3,829,269
FOAM PLASTIC LOOSE FILL PACKING
Layle V. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 831,572, June 9, 1969, abandoned. This application Sept. 20, 1971, Ser. No. 182,055
Int. Cl. B29c 17/14
U.S. Cl. 425—308 4 Claims



Loose fill foam plastic packing is prepared by extruding an expandable plastic composition to form an unfoamed or unexpanded strand which is subsequently cut into short lengths and foamed, the improvement which comprises extruding the strand through a generally helical passageway. The strand on foaming has a generally helical configuration.

3,829,270
HYDRODYNAMIC EXTRUSION DEVICE
Petrus Cornelis Wilhelmus DeBonth, Boekel; Haibe Osinga, Venlo; Cornelis Andries Verburg, Zaadam, and Everhardus Albertus Muijdfrman, Emmasingel, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 30, 1973, Ser. No. 328,018
Claims priority, application Netherlands, Feb. 8, 1972, 7201605
Int. Cl. B29f 3/02
U.S. Cl. 425—381.2 5 Claims

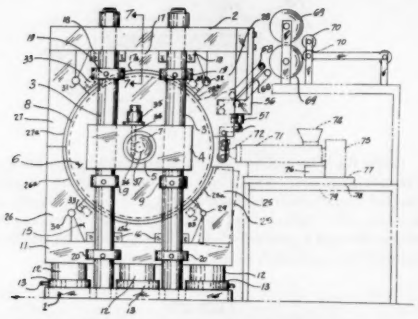


A hydrodynamic extrusion device for processing viscous and elastoviscous materials, in particular thermoplastic synthetic materials, which device comprises two circular discs which are placed at a small axial distance and of which one forms part of a rotor and the other one forms part of a stator. A pattern of logarithmic spiral grooves is provided on one of the discs on the surface facing the other disc, which grooves, in cooperation with the smooth surface of the other disc and upon relative rotation of the two discs, produce both a hydrodynamic pressure build-up and a centripedal material transport.

3,829,271
APPARATUS FOR MOLDING STRIP MATERIAL
Don A. Taylor, Box Wadsworth, Wadsworth, Ohio 44287
Filed Nov. 2, 1972, Ser. No. 303,212
Int. Cl. B29c 3/04
U.S. Cl. 425—385 10 Claims

Uncured elastomeric material to be molded into a tire tread is fed progressively from a fixed feed station into a radially

outwardly open mold cavity extending partway about the periphery of a cylindrical mold member as the member is rotated about its axis. When charged, the rotation is stopped and one or more mold sections complementary to the member are moved to closed position relative to the cavity and applied under molding pressure. While so applied, the member and sections are heated to cure the molded charge. Upon completion of the curing operation, the mold is opened, the cylndrical mold member rotated, and the molded strip is stripped progressively endwise from the cavity at a fixed discharge station. During stripping, a succeeding charge is fed progressively into the cavity, and, at the end of the stripping step, the operation is repeated. The material may be delivered to the cavity as a prepared strip of raw material at room temperature or extruded directly by an extruder into the cavity at elevated extruding temperature. A plurality of like molds may be arranged to be charged successively from a single extruder so that each mold can be stripped and charged while curing is being effected in the others, thus rendering the production of threads substantially continuous.

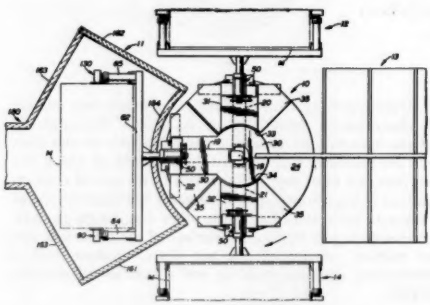


3,829,272

ROTATIONAL MOLDING MACHINE

Frank R. Carillon; William E. Meyer, both of Akron, and Dario J. Ramazzotti, Tallmadge, all of Ohio, assignors to McNeil Corporation, Akron, Ohio

Filed May 21, 1973, Ser. No. 362,099
Int. Cl. B29c *5/04*
U.S. Cl. 425—430 **23 Claims**



Disclosed is an apparatus for rotationally molding or casting an article at a plurality of work stations where operations such as loading, heating and cooling take place. A vertically extending support member carries a plurality of mold carrying arms which through independent drive mechanisms travel from station to station during the molding process. The molds can be rotated on at least one axis at any or all of the stations to uniformly distribute material therein.

3,829,273

DEVICE FOR SEPARATING CONCRETE POLE AND THE LIKE FROM MOLD FRAME

Senry Okada, Tokyo; Masaaki Hanawa, Kawasaki; Mitsuo Ohoka, Tokyo; Seishichiro Nagawa, Yokohama, and Toshio Nawa, Suzuka, all of Japan, assignors to Nippon Concrete Industries Co., Ltd., Tokyo, Japan

Filed June 30, 1972, Ser. No. 268,196
Int. Cl. B28b *21/90*
U.S. Cl. 425—444 **3 Claims**

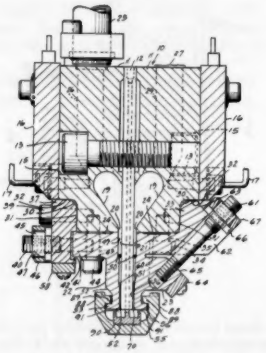
This invention relates to improvement on a device for separating a concrete pole and the like from a mold frame and respective parts of said device, which comprise providing an extruding device having an oil pressure jack at one end of the mold frame and a pulling-out device having a clamp trolley at the other end of said mold frame as a device for separating a concrete product such as a concrete pole or the like which has been subjected to centrifugal clamping and steam curing in the mold frame having a cut-into-two type circular section, after clamp bolts at one side of aforesaid mold frame have been released, extruding the content at a predetermined dimension by the aforesaid extruding device, and then clamping to pull out the content by said pulling-out device thereby to place the content on a roller.

3,829,274

INTERCHANGEABLE DIE LIPS FOR EXTRUSION DIE AND INDEPENDENTLY ADJUSTABLE DECKLES THEREFOR

James J. Melead, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 19, 1972, Ser. No. 299,044
Int. Cl. B29d *7/04*
U.S. Cl. 425—466 **19 Claims**



Film extrusion die in the form of an elongated die body, which may be split and divided by a divider plate and have a pair of spaced extrusion orifaces on opposite sides of the divider plate detachably secured to the die body. The divider plate may be removed to provide a single extrusion orifice die, if desired. An inlet for the hot thermoplastic material enters each die half. A manifold chamber in each die half communicates with an associated inlet and leads to a melt flow passageway leading along a wall of the divider. Adjustable die

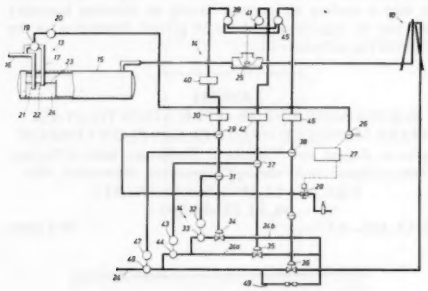
lips define the orifices for the die, and have spaced lands for internal deckles, controlling the edge of the film. A deckle boat supported on the die lips carries spaced deckle seals having sealing engagement with the bottoms of the orifices. An adjustment means is provided for adjusting the external and internal deckles as a unit. The internal deckles may be adjustably moved relative to each other and relative to the external deckle to disrupt the edge of the molten plastic and minimize edge bead. The die lips may be in a package of different forms, best suited to the particular type of plastic being extruded and are all adjustable and interchangeable.

3,829,275

SMOKELESS GAS FLARE

John J. Stranahan, Port Arthur; John C. L. Hollier, Nederland, and Huch C. Deloney, Houston, all of Tex., assignors to Texaco, Inc., New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,453
Int. Cl. F23n *1/08*
U.S. Cl. 431—4 **3 Claims**



A method and at least one steam aspirating gas flare for carrying out the method are disclosed for smokeless burning of undesired gas.

The flare includes a steam control valve responsive to a new very low gas flow detector utilizing a knockout drum water seal, a by-pass line with an orifice run, and a water level switch for supplying an empirically set fixed flow of steam to the flare for ensuring a smokeless flame prior to the gas flow rate reaching a measurable rate. A full range flare including all other gas flows includes also several steam flow valves, each valve being empirically set to provide the proper steam-to-gas ratios throughout its respective range responsive to several corresponding gas flow detectors for ensuring a smokeless flare as the flare gas flow varies from the immeasurable ranges through the measurable ranges of the detectors.

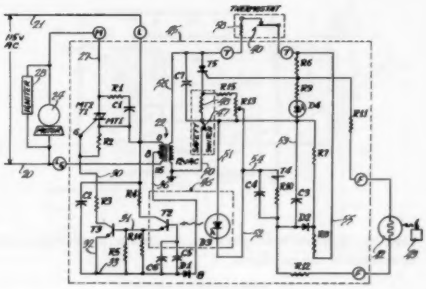
3,829,276

BURNER CONTROL

Robert J. Lenski, and James H. Meyer, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 21, 1973, Ser. No. 362,387
Int. Cl. F23n *5/08*
U.S. Cl. 431—14 **13 Claims**

A control system for an oil burner including a motor for pumping fuel to the burner, an igniter for lighting the fuel, and an electronic switch for controlling energization of the motor and the igniter, all in a line voltage circuit, together with a low voltage circuit for controlling operation of the motor and igniter switch including a relay controlling the gate of the switch, a second electronic switch and a thermostat in circuit with the relay for energizing the relay, a third electronic switch for triggering the second switch, a gate circuit for trig-



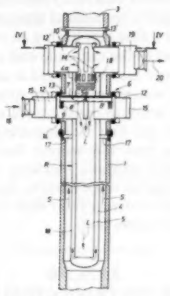
gering the third switch including a light-sensitive flame detector cell and a light for indicating operability of the flame detection circuitry.

3,829,277

MANTLE-RADIATION RECUPERATOR

Hans-Rudiger Scheunemann, Tonisvorst, Germany, assignor to Kleinewefers Industrie-Compagnie GmbH, Krefeld, Germany

Filed Jan. 10, 1973, Ser. No. 322,415
Int. Cl. F21h *1/04*
U.S. Cl. 431—109 **9 Claims**



A mantle-radiation recuperator with a cylindrical mantle and a distributing chamber, in which the cylindrical mantle conveys the fluid to be heated up and is passed around by flue gases, and in which a recuperator mantle is suspended in a chimney which mantle is connected to supports the outer ends of which are adapted to be rested on the masonry of the chimney or a part connected thereto.

3,829,278

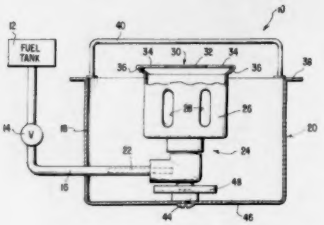
GASOLINE STOVE

Harvey Larry Penberthy, 5624 S.W. Admiral Way, Seattle, Wash. 98116

Filed Apr. 20, 1973, Ser. No. 352,948
Int. Cl. F23d *11/44*
U.S. Cl. 431—227 **13 Claims**

This invention relates to a stove for burning various hydrocarbon fuels such as gasoline, naphtha, kerosene and the

like and more particularly is directed to an improved burner construction for portable stoves of this type which may be



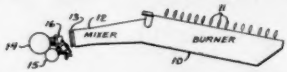
used by campers, back-packers, mountain climbers and others interested in the outdoors.

3,829,279

DUAL FUEL BURNER APPARATUS

Ray W. Qualley, and Robert L. Thompson, both of Racine, Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Filed Aug. 20, 1973, Ser. No. 389,888
Int. Cl. F23d *13/40*
U.S. Cl. 431—354 **5 Claims**



A dual fuel burner apparatus for burning two or more different types of fuel some of which require greater amounts of primary air entrapped with the fuel than others and comprising a first nozzle for a first fuel having an orifice directed into and located adjacent to the entrance end of a mixer chamber of the customary type leading toward a customary burner, a second nozzle for a second fuel having an orifice also directed into and located adjacent to the entrance end and adjacent to the first nozzle with the first fuel requiring more primary air for proper burning than the second fuel, a shutter at the second nozzle orifice partially blocking primary air to the second fuel but having an open portion adjacent the first nozzle orifice providing relatively freer flow of primary air to the first fuel than to the second fuel.

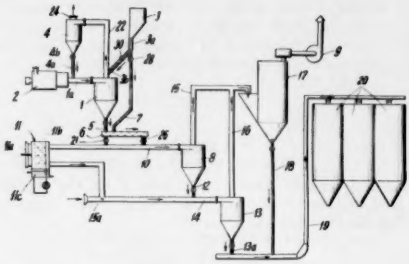
3,829,280

APPARATUS FOR THE PRODUCTION OF POLYPHASE GYPSUM

Oswald Jenne; Josef Steinkuhl, both of Essen; Otto Wiechmann, Recklinghausen, and Gerhard Reimann, Mulheim, all of Germany, assignors to Rheinstahl AG, Essen, Germany

Filed Oct. 16, 1972, Ser. No. 298,009
Claims priority, application Germany, Jan. 7, 1972, 2200532
Int. Cl. F27b *15/00*
U.S. Cl. 432—58 **4 Claims**

Gypsum is treated in a final burning cyclone which discharges into a conveyor which is arranged to feed to a discharge into a cooling line leading to a cooling cyclone. The cooling line is connected to a humidifier and may be operated with or without the humidifier. Material is also fed to the conveyor from a material bin located downstream of the final burning cyclone. A bypass is connected to the conveyor to feed directly from the discharge of the final burning cyclone into the cooling line. With the inventive method, polyphase gypsum with an adjustable setting behavior is produced by first heating gypsum to form a phase mixture of dihydrate, hemihydrate and anhydrites. The heating is carried out in a carrier gas burning plant with a burning gas temperature which is only slightly above the exit terminature of the burnt



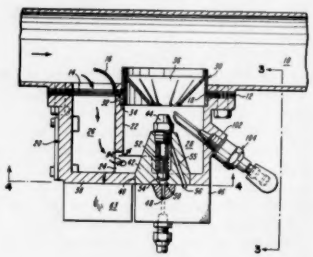
material and part of the anhydrite III, which is undesired in the end product, is then rehydrated to hemihydrate. The rehydration of anhydrite III is effected by introducing the phase mixture into a cooling air current having an absolute humidity which can be regulated to about 30 g/Nm3 depending on the portion of the anhydrite III.

3,829,281

BURNER MODULE FOR APPLICATION TO AN AIR INTAKE MANIFOLD OR OTHER GAS FLOW CONDUIT

Eugene C. Briggs, and William C. Wellbaum, both of Dayton, Ohio, assignors to Koehring Corporation, Milwaukee, Wis.

Filed June 12, 1972, Ser. No. 262,011
Int. Cl. F23d *13/00*
U.S. Cl. 432—63 **20 Claims**



A burner module having particular application to an engine intake manifold, applicable to any gas flow conduit for gas or air heating purposes, comprising a shell-like housing mounting means to intercept a portion of the air moving through the manifold or conduit and to channel said portion into and through a supplementary flow path defined in the housing. This flow path is arranged to exit to the manifold or conduit downstream of the intercepting means. This supplementary flow path is so formed as to swirl the intercepted air about a fuel nozzle. Atomized fuel which issues from the nozzle is externally ignited to produce a flame which is formed in a small tight configuration within a flame retention head defining the exit from said flow path. A portion of the air moving through the flow path is diverted to pass directly through the fuel nozzle to assist in aspirating and atomizing the fuel which is passed therethrough. The major portion of the intercepted air is directed about the flame in a supporting and a shielding relation thereto whereby to provide a gas envelope separating

the flame from the surrounding surface of the flame retention head. The latter together with the intercepting means functions to create a relatively non-turbulent environment for the flame which is quietly exposed so as to maintain a relatively uniform temperature of the supporting and shielding gas or air, which it heats in passage thereby in the course of its exit to the manifold or conduit. Further, the flame uniformly adds heat to the main stream of the gas flowing through the related manifold or conduit.

3,829,282

SATELLITE COOLER FOR A ROTARY KILN

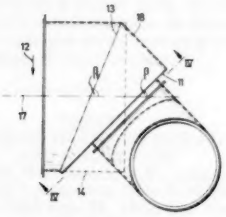
Herbert Deussner, Bensberg-Refrath, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln, Germany

Filed Dec. 15, 1972, Ser. No. 315,557

Claims priority, application Germany, Dec. 15, 1971, 2162236

Int. Cl. F27b *7/00*

U.S. Cl. 432—80 **12 Claims**



Satellite cooler which includes a plurality of cooling tubes distributable uniformly about the periphery of a rotary kiln at the material outlet end thereof, the cooling tubes being formed with respective material inlet openings connectible by respective tubular connecting chutes to respective material discharge openings formed in the casing of the rotary kiln, the material discharge openings being offset in rotary direction of the kiln relative to the respective material inlet openings of the cooling tubes, each of the cooling tubes having a respective inlet end severed obliquely to the axis of the respective cooling tube so that the severing plane extends substantially vertically when the respective material discharge opening in the rotary kiln casing has attained substantially its lowest position beneath the rotary kiln axis and an end plate disposed in the severing plane and closing the cooling tube, the material inlet opening being formed in the end plate.

3,829,283

ROTARY RETORT FURNACE

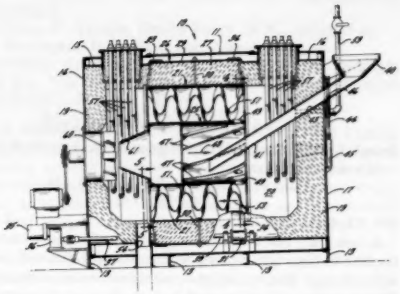
Karl A. Wulf, Rockford, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Oct. 29, 1973, Ser. No. 410,823

Int. Cl. F27b *7/04, 7/14*

U.S. Cl. 432—103 **14 Claims**

A heat treating furnace in which several cylindrical retorts are clustered in a circle and are adapted to revolve in unison about a central axis in a heating chamber. Workpieces delivered into the chamber are distributed into the retorts and are exposed to heated gas as the cluster is revolved to cause the workpieces to advance through and tumble within the retorts.



3,829,284

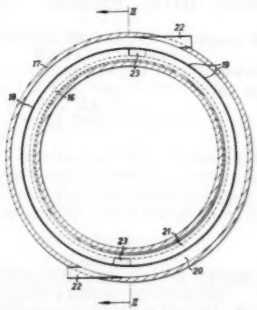
HEAT TREATMENT APPARATUS

Maurice Hemingway, Mirfield, and Trevor Ward, Dewsbury, both of England, assignors to Hotwork Limited, Dewsbury, Yorkshire, England

Filed May 29, 1973, Ser. No. 364,282

Int. Cl. F27b *3/02, 17/00*

U.S. Cl. 432—183 **5 Claims**



A welded joint between two pipes is stress relieved by injecting gaseous exhaust from two gas burners at high velocity into a ring through diametrically opposed inlets. The ring has an inwardly opening annular mouth which surrounds the welded joint and is separated from the inlets by an apertured distribution ring which divides the interior of the ring into inner and outer annular enclosures. The gases are injected tangentially with respect to the ring so that they circulate around the outer enclosure and pass to the inner enclosure

through the apertures in the distribution ring. Thus the hot gases are distributed evenly around the inner enclosure to heat the welded joint for stress relieving. Outlet apertures are provided in the ring for the escape of waste gases from the inner enclosure.

3,829,285

RECUPERATORS FOR INCINERATORS

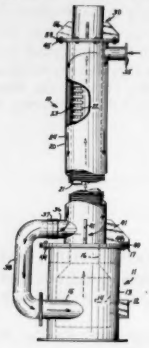
Joseph J. Beck, Berlin, Wis., assignor to McQuay-Perfex, Inc., Minneapolis, Minn.

Filed Feb. 28, 1973, Ser. No. 336,436

Int. Cl. F28f 1/10

U.S. Cl. 432—223 **1 Claim**

A compact, low cost heat recuperator for incinerators and the like having one or more heat exchange tubes with internal and external fins, positioned within an outer tubular shell. Means at one end of the shell hold the heat exchange tubes in fixed position, and an expansion seal is provided at the other. Means are provided for conducting exhaust gases through the heat exchange tubes and process air around the heat exchange tubes for preheating. Connecting means are disclosed for attaching the recuperator assembly to an existing incinerator so that minimum modifications are required.



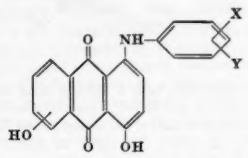
CHEMICAL

3,829,286
SUBLIMATION TRANSFER DYEING WITH 4,8-DIHYDROXY-1-ARYLAMINO-ANTHRAQUINONES

Masao Anzai, Funabashi, and Masayuki Miyatake, Tokyo, Japan, assignors to Toppan Printing Co. Ltd., and Toyo Ink Manufacturing Co., Ltd., both of Tokyo, Japan

No Drawing. Filed Feb. 16, 1973, Ser. No. 333,033
Claims priority, application Japan, Feb. 23, 1972, 47/18,105
Int. Cl. D06p *1/20*
U.S. Cl. 8—2.5 **14 Claims**

A sublimation transfer dyeing method which is characterized by the use of novel and improved compounds of the general formula:



in which X represents a methyl group or ethyl group at ortho or meta position with regard to the imino group, and Y represents a hydrogen atom, methyl group, methoxy group, fluorine atom or chlorine atom.

3,829,287
HIGH STRENGTH LIQUID METALLIZED AZO COLORANTS

Alvin Carl Litke, West Seneca, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,390
Int. Cl. D06p *1/10*
U.S. Cl. 8—42 R **4 Claims**

High strength liquid azo colorants, especially suitable for coloring paper, are prepared by metallizing certain azo dyestuffs in a solution of diethanol amine. The diethanol amine not only aids in the metallization of the azo dyestuffs but allows the metallized dyestuff to remain in solution. Liquids of diverse color strength can be produced by varying the amounts of dyestuff in the solution.

3,829,288
PROCESS FOR FINISHING CELLULOSE-CONTAINING TEXTILES

Hans Deiner, Neusass-Lohwald, Hans Hofstetter, Gersthofen, and Willy Bernheim, Diedorf, Germany, assignors to Chemische Fabrik Pfersee GmbH Augsburg, Augsburg, Germany

No Drawing. Filed June 1, 1972, Ser. No. 258,772
Claims priority, application Germany, June 4, 1971, P 21 27 766.7
Int. Cl. D06m *13/14, 13/40, 15/66*
U.S. Cl. 8—115.6 **8 Claims**

A process for finishing textiles at least partly containing cellulose with aminoplast-resins and organopolysiloxanes from organic solvents, is characterized in that conditionally moist textiles are impregnated with baths containing from 5 gr./l. to 60 gr./l. of an organically soluble artificial resin preferably etherified with lower monovalent alcohols, 5 gr./l. to 50 gr./l. of a hydrogen alkylpolysiloxane, at least 25 ml./l. of a polar solvent and at least 1.5 gr./l. of a dialkyltinacylate dissolved in a nonpolar water-insoluble solvent. Thereupon the textiles are freed from the surplus bath, dried and condensed.

3,829,289
PROCESS FOR DECREASING THE FLAMMABILITY OF TEXTILES AND PRODUCT PRODUCED THEREBY

Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to Burlington Industries, Inc., Greensboro, N.C.

No Drawing. Continuation-in-part of abandoned application Ser. No. 140,256, May 4, 1971. This application Apr. 7, 1972, Ser. No. 242,237
Int. Cl. D06m *13/28, 13/44, 13/54*
U.S. Cl. 8—115.7 **12 Claims**

A process for decreasing the flammability of textiles comprising a cellulosic fiber component and a nitrogen-free thermoplastic fiber component which comprises treating the cellulosic fiber component with an unsaturated compound (viz, N-methylol phosphono propionamide, N-methylol amide, N-methylol carbamate, or allyl halide) so as to introduce unsaturated groups into said cellulosic component and subsequently halogenating (preferably brominating) the unsaturated groups thus introduced into said cellulosic component. Where the unsaturated compound used does not contain phosphorus, organophosphorus reagents can be introduced in a separate step (before or after halogenation of the unsaturated groups).

3,829,290
REACTION OF SODIUM CELLULOSATE WITH MONO- AND DIFUNCTIONAL EPOXIDES IN NON-AQUEOUS MEDIA

Ralph J. Berni, Metairie, Ruth R. Benerito, New Orleans, and Donald M. Soignet, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed June 29, 1972, Ser. No. 267,313
Int. Cl. D06m *13/10;* **C08b** *11/08*
U.S. Cl. 8—120 **16 Claims**

Fibrous cellulose ethers have been prepared by a non-aqueous process comprising preparing a sodium cellulosate with suitable Cellulose I content in preparation for reaction with an epoxide to yield a derivative generally useful in the field of permanent press textiles.

3,829,291
PROCESS OF REMOVING POLYVINYL ALCOHOL SIZE FROM FABRICS WITH HYDROGEN PEROXIDE

Louis Kravetz, Houston, Tex., assignor to Shell Oil Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 141,406, May 7, 1971. This application Jan. 5, 1973, Ser. No. 321,191
Int. Cl. D06l *1/06, 1/14*
U.S. Cl. 8—138 **5 Claims**

A process for removing polyvinyl alcohol size from fabrics with hydrogen peroxide comprises contacting the fabric with an aqueous solution of dilute hydrogen peroxide in the presence of ions of certain transition metals.

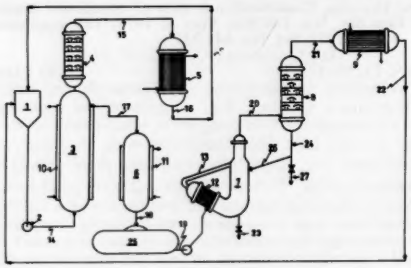
3,829,292
APPARATUS FOR THE PRODUCTION OF 1,2-DIHYDROQUINOLINES

Heliodoro Monroy, Insurgentes Sur 591, 7° Piso, Mexico City 18, Mexico

Original application Apr. 26, 1971, Ser. No. 137,217, now abandoned. Divided and this application Feb. 9, 1973, Ser. No. 331,211
Int. Cl. B01j *9/02, 9/16*
U.S. Cl. 23—263 **1 Claim**

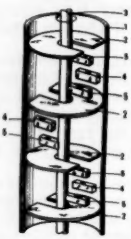
Novel substituted 1,2 - dihydroquinolines have antioxidant, bactericidal and fungicidal properties. Said 1,2-dihydroquinolines are prepared by condensing, in the presence of a catalyst, preferably iodine, a substituted aromatic amine with a carbonyl compound, at a temperature

of between 90 and 300° C., said catalyst being preferably present together with an activator selected from alkyl or alkaryl halides. Said process is preferably carried out in an apparatus essentially comprising a mixing and feeding device, a first reactor being a packed tower of a height sufficient to provide for the necessary residence time of the reaction mixture in continuous ascending flow there-



through, a second reactor being a packed tower of lesser height, through which the partially reacted mixture descends an evaporator to evaporate the unreacted aromatic amine from the substituted 1,2-dihydroquinoline obtained, and means for stripping the light fractions evolved in the first reactor and in the evaporator and reusing the same as starting materials.

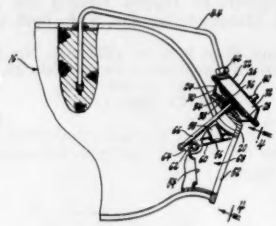
3,829,293
CRYSTALLIZATION APPARATUS
Jean-Pierre Wauquier, Givors, France, and Herbert Friedrich Wiegandt, Ithaca, N.Y., assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France
Filed Mar. 30, 1973, Ser. No. 346,455
Claims priority, application France, Apr. 31, 1972, 7211705
Int. Cl. B01d *9/02*
U.S. Cl. 23—273 R **7 Claims**



This apparatus comprises an elongated enclosure subdivided into compartments by rigidly arranged plates. The plates are designed in such manner as to leave passage to a vertical shaft provided with blades, when disassembling the apparatus.

3,829,294
BY-PASS VALVE CONTROL
George O. Smith, Ferndale, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 21, 1972, Ser. No. 282,433
Int. Cl. F01n *3/14*
U.S. Cl. 23—288 F **1 Claim**

A device to protect a catalytic converter from overheating which includes a valve normally directing exhaust gas flow into the catalytic converter, a chamber containing compressed fluid and having one wall comprising a flexible diaphragm linked to the valve and held against a compressed spring by the compressed fluid, a fluid conduction passage between the chamber and the interior of

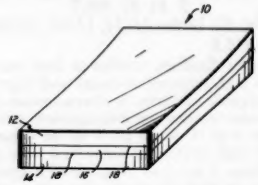


the catalytic converter, and a fusible plug in the passage within the catalytic converter which melts at a predetermined temperature to allow the compressed fluid to escape and the spring to move the valve to direct the exhaust gases around the catalytic converter.

3,829,295
SINTERED IRON BASED ARTICLES INFILTRATED WITH COPPER BASED METALS
Edwin Bruce Farmer and Terence Michael Cadle, Coventry, England, assignors to Brico Engineering Limited, Coventry, England
No Drawing. Filed Oct. 13, 1972, Ser. No. 297,363
Claims priority, application Great Britain, Oct. 23, 1971, 49,345/71
Int. Cl. B22f *3/26*
U.S. Cl. 29—182.1 **6 Claims**

A sintered metal article including a sintered skeleton having the composition 1.5–2.0% Nickel, 0.3–0.7% Molybdenum, 1–2% Copper, 0.1–0.3% Carbon, not more than 2% of Manganese, Silicon, Sulphur, and Phosphorus together (percentages being by weight), the remainder (apart from impurities and trace elements) being Iron, the sintered skeleton being infiltrated with Copper or Copper-based alloy, and the article being case-hardened.

3,829,296
THERMOSTAT METALS
Kenneth Charest, Attleboro, Mass., Robert F. Hanley, Pawtucket, R.I., and Jacob L. Ornstein, Norton, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed June 26, 1972, Ser. No. 266,027
Int. Cl. B32b *15/00*
U.S. Cl. 29—195.5 **3 Claims**



Thermostat metals which have high flexivities on the order of at least about 130×10^{-7} for displaying substantial flexing movement in response to temperature

variations within a selected range but which are adapted to be restrained against additional flexing movement while being subjected to much higher temperatures without tending to become permanently deformed are shown to comprise three layers of metal bonded together, two of these metal layers having relative thermal expansion properties, moduli of elasticity and thicknesses providing the thermostat metals with the desired high flexivities and the third layer, preferably of high strength steel disposed between the two other layers, having thermal expansion properties intermediate the thermal expansion properties of the two other layers, and having much greater strength than the materials of either of the two other layers.

Thermostat metals conventionally embody metal layers of selected alloys which have been especially developed to display very high and very low coefficients of thermal expansion. When these metal layers are bonded together in work-hardened condition, the resulting thermostat metals have high flexivities and display a substantial degree of flexing movement in response to temperature changes. While such conventional thermostat metals are widely useful, it is found that in some applications, where the thermostat metals are arranged to display substantial flexing movement in response to temperature variations within a selected temperature range but are restrained against additional flexing movement while being subjected to relatively higher temperatures, the thermostat metals tend to undergo a change in thermal response characteristics during use. That is, it is found that stresses developed in the thermostat metals when they are heated to high temperature while restrained against flexing movement tend to cause a degree of permanent deformation in the thermostat metals.

3,829,297

PULP BOUND COMPACTED FUELS

Chester C. Crawford, 13001 La Cresta Drive, Los Altos Hills, Calif. 94022

Continuation of application Ser. No. 870,313, Sept. 29, 1969, which is a continuation of application Ser. No. 626,739, Mar. 29, 1967, both now abandoned. This application Aug. 17, 1972, Ser. No. 281,374

Int. Cl. C10l *5/10, 5/40*

U.S. Cl. 44—15 D **5 Claims**

Compacted and bound solid particles, for example fuels such as barbecue briquettes and fireplace logs made from particulate combustible materials such as sawdust, wood flour, charcoal, and coke in which the binder for the combustible materials is cellulose fibers derived from paper pulp.

ERRATUM

For Class 48—214 see:
Patent No. 3,828,474

3,829,298

METHOD OF FORMING A SCREW SHAPED GEAR HONE

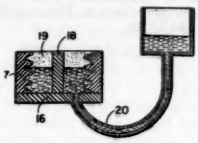
Masato Ainoura, Kitashigeyasu, Japan, assignor to Tsukihoshi Gomu Kabushiki Kaisha (The Moon-Star Rubber Ltd.), Kurume-shi, Fukuota-ken, and Kabushiki Kaisha Kashifuji Tekkosho (Kashifuji Works, Ltd.), Kyoto-shi, Japan

Original application Sept. 24, 1970, Ser. No. 74,973, now Patent No. 3,708,925, dated Jan. 9, 1973. Divided and this application Oct. 28, 1971, Ser. No. 193,268

Int. Cl. C08g *51/12*

U.S. Cl. 51—298 **1 Claim**

A worm-shape or screw-shape hone, for honing gear teeth, has the tooth profile of the basic rack at its normal plane. The hone is formed by molding synthetic polymers in which there are dispersed abrasive particles, to provide a Shore hardness of 15°–75° and a Young's modulus $0.5–70\times10^3$ kg./cm.^{2}. The hone is engaged with the gear to be finished and is rotated by a motor with the hone driving the gear. During honing of the gear, the hone is fed parallel to the axis or tooth trace of the gear over the



whole face width of the gear. The polymer material may comprise a co-cured blend of polyurethane rubber and epoxy resin having a suitable flexibility, good resiliency and high abrasion resistance, and the abrasive particles may comprise Alundum or Carborundum, the abrasive particles being exposed at the working surface of the hone.

3,829,299

MOLDED ABRASIVE ARTICLE OF IRON-SILICON ALLOY, AND DIAMOND POWDER

Michael V. Metzger, Highland Park, and Reginald Pearce, Bloomingdale, Ill., assignors to Engis Corporation, Morton Grove, Ill.

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,764

Int. Cl. B24d *3/06;* **C04b** *31/16*

U.S. Cl. 51—309 **13 Claims**

An abrasive article consisting of abrasive particles distributed in a metallic base material consisting of an alloy of iron and silicon. Also included in the invention is a novel method for producing the article of the invention in a molding process utilizing, in combination, controlled heat and pressure.

3,829,300

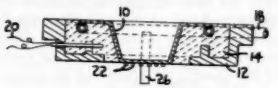
BUSHING UNIT INCLUDING CAST IRON BUSHING FRAME

Robert G. Shealy, Shelby, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 216,473, Jan. 10, 1972, which is a continuation-in-part of application Ser. No. 106,928, Jan. 15, 1971, which in turn is a continuation of application Ser. No. 771,078, Oct. 28, 1968, all now abandoned. This application Sept. 14, 1973, Ser. No. 397,464

Int. Cl. C03b *37/02*

U.S. Cl. 65—1 **3 Claims**



A bushing frame for supporting a fiber glass forming bushing is constructed of cast iron. Cast iron of the white or gray type may be employed. Preferably ductile cast iron or ferritic nodular cast iron is employed.

3,829,301

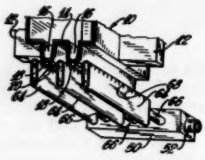
METHOD FOR PREVENTING FLOODING OF GLASS FIBER BUSHINGS

Robert G. Russell, Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation

Continuation-in-part of application Ser. No. 123,637, Mar. 12, 1971, which is a continuation-in-part of application Ser. No. 14,726, Feb. 24, 1970, which in turn is a continuation of application Ser. No. 628,997, Apr. 6, 1967, all now abandoned. This application Mar. 21, 1973, Ser. No. 343,588

Int. Cl. C03b 37/02

U.S. Cl. 65—2 31 Claims



This invention relates to processing heat-softenable material, such as glass, involving treatment of a surface of a body or substrate at which the heat-softened material is present, such as the surface at the stream delivery region of a feeder, and pertains particularly to a method and arrangement establishing an environment at the surface of a character providing an interfacial condition promoting separation of the material from the surface thereby minimizing or eliminating the tendency for the material to flood at the surface by use of carbon or hydrogen in a protective inert atmosphere.

3,829,302

METHOD OF CHANGING SURFACE CHARACTERISTICS OF SIZED GLASS FIBERS AND FIBERS HAVING CHANGEABLE SURFACE CHARACTERISTICS

Harold L. Haynes, Granville, and Michael J. Harvey, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Apr. 10, 1972, Ser. No. 242,628

Int. Cl. G03c 25/02

U.S. Cl. 65—3 10 Claims

Glass fibers having a coating thereon of a powdery type glass lubricant having emulsified particles of a thermoplastic resin adjacent the surface of the coating. The emulsified particles are separated by the powdery type lubricant to provide a surface adaptable for initial stages of fabrication, following which the coated fibers are heat treated to agglomerate the heat softenable particles and change the surface characteristics of the coated fibers for subsequent processing and/or use. In a preferred embodiment, the heat softenable particles are caused to congregate at the surface of the coating by reason of an anionic emulsifying agent. In the most preferred embodiment, the coating is primarily a starch coating with the emulsified particles of the heat softenable resin kept separated by the starch. After the twisting operation, the coated fibers are, thoroughly dried and heated above the softenable point of the resin to provide a controlled adhesion between the fibers.

3,829,303

DIELECTRIC PROPERTIES OF INORGANIC OXIDE GLASS-CERAMIC MATERIALS

Robert J. Zeto, Lincroft, Charles D. Bosco, Bricktown and Eugene Hryckowian, Oceanport, N.J., assignors to The United States of America, as represented by the Secretary of the Army.

No Drawing. Filed Oct. 25, 1973, Ser. No. 409,498

Int. Cl. C03b 35/00, 3/00

U.S. Cl. 65—32 6 Claims

The dielectric properties, particularly the dielectric constant and dielectric strength, of inorganic oxide glass-ceramic materials is improved by subjecting the materials to hot, isostatic nitrogen gas or oxygen gas pressures during crystallization.

3,829,304

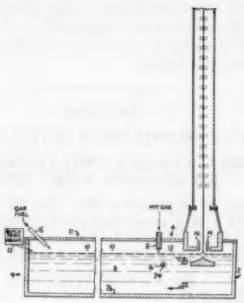
GLASS DRAWING CONDITIONING MEANS

Gerald E. Kunkle, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of application Ser. No. 111,907, Feb. 2, 1971, now U.S. Pat. No. 3,761,236, Sept. 25, 1973, and which is a continuation-in-part of application Ser. No. 826,860, May 22, 1969, now abandoned. Divided and this application May 16, 1973, Ser. No. 360,886

Int. Cl. C03b 5/22, 15/02

U.S. Cl. 65—193 1 Claim



Sheet glass of commercial quality is made by a Pittsburgh Process without using a shutoff. Instead, means are used to seal the kiln from the tank, and a water-cooled pipe is submerged in the glass and lowers suitably the flow; throughout ratio. The submerged pipe has a diameter of 1.2 to 5 inches and it is located so that it obstructs the return flow, being positioned so that its top is not above the midpoint of the depth of the glass, and so that its bottom is at least one-fifth of the depth of the glass above the bottom. In this way the benefits of having no shutoff are obtained; lower costs, and an avoidance of defects in the products caused by shutoff.

3,829,305

SLIME CONTROL COMPOSITIONS CONTAINING PHENOLIC COMPOUNDS AND THEIR USE

Robert H. Brink, Jr., Doylestown, Bernard F. Shema, Glenside, Roger L. Justice, Cornwells Heights and Paul Swered, Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed July 6, 1971, Ser. No. 160,191

Int. Cl.: A01n 9/02

U.S. Cl. 71—67 9 Claims

The present invention relates to certain processes and compositions useful for inhibiting and/or controlling the

growth of slime in water and, in particular, water employed for industrial purposes. Water employed in the manufacture of pulp paper and water employed in cooling water systems, as well as other industrial waters, provide environments which are conducive to slime formation. The novel compositions of the present invention are mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae, which produce slime in aqueous systems. The slime, of course, is objectionable from an operational and/or an aesthetic point of view. Specifically, the invention is directed to and the use of compositions comprising a combination of 5-chloro - 4 - phenyl - 1,2 - dithiole-3-one and phenolic compounds (or mixtures thereof). The inventive compositions inhibit the growth of slime in water, or more specifically, possess biocidal activity against bacteria, fungi and/or algae. The phenolic compounds contemplated for use in accordance with the present invention are those phenolic compounds which possess the capacity to kill or inhibit the growth of slime-forming microorganisms such as bacteria, fungi and algae. The type phenolic compounds encompassed by the present invention may be exemplified by: phenol, ortho-phenylphenol, 2,3,4,6-tetrachlorophenol, 4-chloro - 2 - cyclopentylphenol and 2-chloro-4-phenylphenol.

3,829,306

PLANT REGULATION WITH 2-HALO-2',6'-DISUBSTITUTED-N-AMIDOMETHYL-ACETANILIDES

Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 21, 1972, Ser. No. 265,094
Int. Cl. A01n *5/00*
U.S. Cl. 71—76 **14 Claims**

The natural growth or development of plants is regulated by an application of a 2-halo-2',6'-disubstituted-N-amidomethyl-acetanilide to said plants.

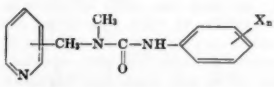
3,829,307

1-PICOLYL-3-PHENYL UREAS AND THEIR UTILITY AS HERBICIDES

Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Apr. 30, 1971, Ser. No. 139,221, now Pat. No. 3,700,678. Divided and this application July 31, 1972, Ser. No. 276,862
Int. Cl. A01n *9/22*
U.S. Cl. 71—94 **10 Claims**

The utility as post and pre-emergence herbicides of the compounds of the formula



in which X is hydrogen, halogen, nitro, methyl, and trifluoromethyl, and *n* is an integer 1 or 2.

3,829,308

ALKOXY TRIFLUOROMETHYLANILINE COMPOUNDS AND USE AS AN HERBICIDE

Philip L. Strong and Don L. Hunter, Anaheim, Calif. and Cecil W. LeFevre, Franklin, Idaho, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

No Drawing. Original application Aug. 5, 1970, Ser. No. 61,449, now Patent No. 3,716,585. Divided and this application May 10, 1972, Ser. No. 252,076
Int. Cl. A01n *9/20*
U.S. Cl. 71—121 **10 Claims**

N-alkyl substituted 5-alkoxy-2-nitro-4-trifluoromethylanilines and their thio analogues. The compounds are useful as herbicides and can be formulated with conventional herbicide carriers.

3,829,309

PROCESS FOR SMELTING ILMENITE TO PRODUCE PIG IRON AND TITANIA-CONTAINING SLAG

John M. Gomes, Reno, Nev. and Kenji Uchida, Tokyo, Japan, assignors to The United States of America as represented by the Secretary of the Interior

Filed June 6, 1972, Ser. No. 260,262
Int. Cl. C01g *23/04*
U.S. Cl. 75—1 **15 Claims**

The smelting of an ilmenite concentrate (61 weight percent TiO_2 and 37 weight percent FeO) with a sodium borate flux and a carbonaceous material, such as coal, as the reducing agent, is performed in a furnace at 1150° C. to 1200° C. to yield molten pig iron in marketable condition (95 to 97 weight percent iron) and slag containing 25 weight percent titania (TiO_2) and less than 1 weight percent FeO, with the slag containing 95 to 99 percent of the titanium. Two alternative procedures are thereafter followed, one a quenching-leaching and the other a leaching-calcination process, to yield a sodium titanate product containing 70 to 80 weight percent TiO_2, a product which can readily be beneficiated to pigment grade TiO_2 by suitable treatment, such as by the well known "sulfate process."

3,829,310

HIGH SURFACE AREA VALVE METAL POWDER

Tyler X. Mahy, Cambridge, Mass., assignor to Norton Company, Newton, Mass.

Filed Apr. 30, 1973, Ser. No. 355,430
Int. Cl. B22f *5/00;* **C22b** *51/00*
U.S. Cl. 75—0.5 BB **19 Claims**

Solid particles of potassium fluotantalate are thoroughly dried and then coated with molten form sodium reducing agent, the coating being accomplished under temperature conditions controlled to remain below a temperature which will initiate the exothermic reduction reaction between these materials. After completion of the coating, the charge of premixed double salt and reducing agent is then heated through the temperature at which the exothermic reduction reaction is initiated. The initiation of the exothermic reaction causes a rapid temperature rise. Over 90% of the tantalum values of the salt charge are formed as elemental tantalum in particle form in the course of the exothermically driven temperature rise. The charge temperature is then stabilized in the range of 700°–1100° C., held for a time at this elevated temperature and then slowly cooled. During the temperature rise, tantalum metal particles nucleate throughout the mass of the premixed charge to form a coherent skeletal structure. This skeleton resists settling as the temperature is raised above the melting temperature of the salt mass, and a substantially homogeneous distribution of tantalum values throughout the reduction charge is formed and maintained. Tantalum metal particles, so formed are highly structured and can be separated as a high yield of high surface area-high capacitance tantalum powder.

3,829,311

ADDITION ALLOYS

John William Grant, Radlett and Gordon John Cox, Sutton Coldfield, England, assignors to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed Sept. 11, 1972, Ser. No. 287,880
Claims priority, application Great Britain, Sept. 9, 1971, 42153/71
Int. Cl. C22c *29/00*
U.S. Cl. 75—122 **6 Claims**

Directed to alloys which are particularly suitable for the introduction of magnesium into molten iron and which contain in weight percent about 5% to 15% nickel, about 5% to 14% magnesium, about 34% to 60% silicon, about 0.5% to about 3% of a rare earth metal, up to about 4%

calcium, up to about 2% carbon, up to about 10% manganese, up to about 10% copper, the balance being essentially iron, in an amount less than about 50%.

3,829,312

PROCESS FOR THE MANUFACTURE OF STEEL OF GOOD MACHINABILITY

Toru Araki, Tokyo, and Shigeo Yamamoto, Oi-machi, Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Jan. 4, 1972, Ser. No. 215,291

Int. Cl. C21c *7/08*; C22c *39/00*

U.S. Cl. 75—129 **9 Claims**

A process for the manufacture of steel capable of being machined at machining speeds ranging from 60 to 300 meters per minute, which comprises deoxidizing a melt of structural killed steel containing 0.1–0.6% of carbon, not more than 1.5% of manganese, not more than 0.5% of silicon, 0.004–0.1% of oxygen, and not more than 0.015% of nitrogen, with a titanium-containing oxygen combining agent, the quantity and composition of the titanium-containing combining agent being so selected that the ingot after the deoxidation contains 0.005–0.8% of titanium, 0.3–1.5% of manganese, 0.005–0.025% of total oxygen, and not more than 0.5% of silicon, and does not contain more than each 0.010% of soluble aluminum and nitrogen, the balance being iron and impurities; and at least a part of the titanium is present in the ingot as titanium-containing oxide type inclusions.

3,829,313

BRAZING ALLOY

Eugene H. Bradburn, Concord, and James T. Tidwell, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Mar. 7, 1973, Ser. No. 338,810

Int. Cl. C22c *21/02*

U.S. Cl. 75—146 **3 Claims**

An aluminum base brazing alloy for aluminum which is resistant to a fluorine and fluoride atmosphere containing silicon and zinc, and wherein the silicon is present as a discontinuous phase.

3,829,314

PHOTOELECTROSTATIC DEVELOPING MATERIALS

Loren E. Shelffo, Palatine, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 57,013, June 9, 1970, which is a division of application Ser. No. 596,476, Nov. 23, 1966, both now abandoned. This application Aug. 22, 1972, Ser. No. 282,804

Int. Cl. G03g *13/16*

U.S. Cl. 96—1.4 **14 Claims**

The developing materials of this invention are used with electrostatic developing processes and the images are fixed by passing the copy sheet through a pair of steel rollers under pressure. The developing materials are composed of aliphatic components having from 6 to 25 carbon atoms. The aliphatic components may also be combined with thermoplastic synthetic resins to control the pressure response level. The pressure response, that is, the fixability of the image onto the copy by pressure, of these materials is correlated to the heat of fusion of the composition as measured by differential thermal analysis.

3,829,315

METHODS FOR MAKING HALF-TONE PRINTS

Gunther Schadlich, Wiesbaden-Biebrich, Renate Haenisch, Wiesbaden, and Roland Moraw, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Application Sept. 8, 1971, Ser. No. 178,828, which is a continuation of application Ser. No. 732,024, May 27, 1968, now abandoned. Divided and this application Oct. 20, 1972, Ser. No. 299,185

Int. Cl. G03f *7/02, 7/24, 5/00*

U.S. Cl. 96—33 **4 Claims**

This invention relates to a method for the production of a printing plate capable of reproducing continuous tones, wherein a light-sensitive material suitable for the production of a printing plate is exposed under a continuous tone original, exposure light being caused to traverse a layer which presents sufficiently uniformly distributed areas of 0.05 to 10 microns in diameter, the light-transmission capacity of which areas contrasts with that of their immediate environment, this contrast layer being of the nature of a so-called shadow pattern, and the exposed material is developed and, if desired, etched.

3,829,316

METHOD FOR THE PREPARATION OF METALLIC LAYERS ON A SUBSTRATE

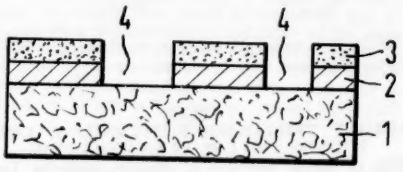
Walther Huber, Altenkunstadt, Heinz Hagen, Neubiberg, and Peter Guglhor, Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Erlangen, and Berlin, Germany

Filed Dec. 29, 1971, Ser. No. 213,427

Claims priority, application Germany, Jan. 19, 1971, P 21 02 421.5

Int. Cl. C23c *3/00*

U.S. Cl. 96—36.2 **6 Claims**



A process for the production of metallic layers on a substrate. Parts of the masking layer and the not needed metallic layer are simultaneously removed. The process is particularly suitable for preparing electrical circuits on ceramic substrates.

3,829,317
PHYSICAL DEVELOPMENT PROCESS UTILIZING VISCOUS SENSITIZING METAL SOLUTION
Laura K. Case, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass.
No Drawing. Continuation of abandoned application Ser. No. 812,378, Apr. 1, 1969. This application Aug. 3, 1972, Ser. No. 277,703
Int. Cl. G03c *5/24, 5/32*
U.S. Cl. 96—48 PD 19 Claims

A new process is described for producing improved metal images in photo-exposed media comprising a photoconductor as the photosensitive component including the step of contacting the medium with a viscous reagent comprising a sensitizing metal ion, e.g. silver ion.

3,829,318
PHOTOPROCESSING STABILIZER SOLUTIONS
Irving J. Magin, Henrietta, N.Y., assignor to Itek Corporation, Lexington, Mass.
No Drawing. Filed Sept. 25, 1972, Ser. No. 291,873
Int. Cl. G03c *1/06, 5/38*
U.S. Cl. 96—61 R 11 Claims

An improved stabilizer composition for use in the rapid processing of a light sensitive silver halide emulsion is disclosed. A typical composition comprises 150–350 grams ammonium thiocyanate, 0.1–1.0 grams 1-phenyl-1,2-tetrazoline-5-thione, and 25–150 grams monobasic potassium phosphate and water to one liter of solution. These compositions are particularly useful for the rapid processing of photographic elements wherein the silver halide emulsion layer contains developing agents therein or contiguous thereto as a separate layer. Prints processed with these compositions have been found to be highly resistant to discoloration, fading and staining on both the emulsion and base sides of the print.

3,829,319
WETTING LIQUID COMPOSITION FOR OFFSET MASTER PLATE
Shigeyoshi Suzuki and Norio Kobayashi, Kyoto, and Kazuo Shimizu, Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
No Drawing. Filed Oct. 6, 1972, Ser. No. 295,698
Claims priority, application Japan, Oct. 8, 1971, 46/79,236
Int. Cl. C09d *5/20;* C09k *3/00, 3/18*
U.S. Cl. 106—2 4 Claims

The printability of an offset master plate can be markedly improved by using a wetting liquid composition comprising (A) at least one of transparent and water insoluble fine particles having a particle size of not more than 0.1μ such as colloidal silica and alumina, (B) at least one of alkali metal salts such as sulfates, halides and nitrates of K and Na, (C) at least one of low molecular polyhydric alcohols and polyalkylene oxides having a molecular weight of not more than 1000 such as polyethylene glycol, propylene glycol, diethylene glycol and hexylene glycol and (D) at least one of weak organic acids such as citric acid, succinic acid, tartaric acid, adipic acid, ascorbic acid and propionic acid. Said composition preferably has a pH value of about 4.0–5.6.

3,829,320
HARDENING OF REFRACTORY/SODIUM SILICATE MIXTURES
Roger Philip Stanbridge, Cleveland, Ohio, assignor to Foseco International Limited, Birmingham, England
No Drawing. Filed July 7, 1972, Ser. No. 269,863
Claims priority, application Great Britain, July 9, 1971, 32,392/71
Int. Cl. C04b *35/16*
U.S. Cl. 106—84 8 Claims

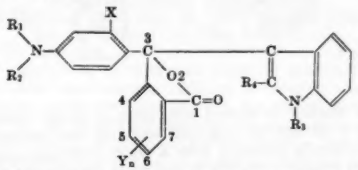
Sand/sodium silicate and analogous mixtures are hardened by a mixture of ethylene glycol monoacetate (EGMA) and ethylene glycol diacetate (EGDA) in which the weight ratio of EGMA to EGDA is 1:1 to 1:9.

3,829,321
STABLE ASPHALT-POLYOLEFIN EMULSIONS
Gene N. Woodruff, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Apr. 3, 1972, Ser. No. 240,793
Int. Cl. C08h *13/08;* C08k *1/62*
U.S. Cl. 106—277 2 Claims

Stable oil-in-water emulsions containing asphalt and a polyolefin are prepared using acidified kaolin clays, which emulsions after curing result in flexible products useful as roofing cement, pond liners, sealants, and the like. If desired, the emulsions can also comprise N,N-dimethylsulfenyl dithiocarbamates which are effective as rodent repellents.

3,829,322
PRESSURE-SENSITIVE PHTHALIDE COMPOUND COPYING SHEET
Minoru Ozutsumi, Yoshihide Miyazawa, and Katsuichi Motohashi, Tokyo, and Masataka Kiritani, Shizuoka, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, and Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Dec. 23, 1971, Ser. No. 211,757
Claims priority, application Japan, Dec. 28, 1970, 46/119,950
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.8 5 Claims

A pressure-sensitive copying sheet comprising an adsorbent solid acid and a microencapsulated color former capable of forming a distinct color when reacted with said adsorbent solid acid coated on the same or different surface of support or supports, said microcapsules containing an organic solvent having dissolved therein as a color former at least one phthalide compound represented by the following formula:



wherein R_1, R_2, R_3, R_4, X, Y and n are described hereinafter, is disclosed.

3,829,323
NOVEL PRINTING AND COATING SYSTEM
John N. Kirch, Cincinnati, Ohio, assignor to Borden, Inc., Columbus, Ohio
No Drawing. Filed Dec. 23, 1971, Ser. No. 211,638
Int. Cl. B44d *1/14*
U.S. Cl. 117—45 11 Claims

A process for producing decorative coatings. A convertible lacquer based on castor oil is applied over an ethyl cellulose ink or lacquer coating on a suitable substrate to produce a textured or "orange peel" effect. Both the convertible castor oil based lacquer and the ethyl cellulose ink or lacquer coating may be either clear or colored, depending on the desired effect.

3,829,324
BONDING CONDENSATION POLYMERS TO POLYMERIC BASE MATERIALS
Pierre J. J. B. Blais, David J. Carlsson, and David M. Wiles, Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
No Drawing. Continuation of abandoned application Ser. No. 24,383, Mar. 31, 1970. This application Mar. 8, 1972, Ser. No. 232,921
Int. Cl. B44d *1/092;* C23c *11/00*
U.S. Cl. 117—47 A 12 Claims

Polymeric substrates are provided with coatings of condensation polymers which provide a wide variety of im-

proved physical, chemical and mechanical properties by first exposing the substrate to an electrical discharge and subsequently applying to the treated substrate the monomeric precursor or precursors of a condensation polymer. Polymerization of the precursors takes place rapidly to produce a strongly adherent coating of the condensation polymer. Polymeric substrates which are particularly useful are polyolefins, polyesters, polyvinyl or polyvinylidene compounds and cellulose and its derivatives and these can usefully be coated with condensation polymers, even those with which they are normally incompatible.

3,829,325

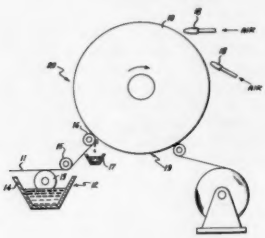
CAST COATING WITH IMPROVED SPEED AND QUALITY

Paul O. Hain, Hamilton, Ohio, assignor to Champion International Corporation

Filed Feb. 23, 1972, Ser. No. 228,588

Int. Cl. B44d *1/44;* D21h *1/22*

U.S. Cl. 117—64 C **13 Claims**



Cast coating is carried out upon a paper substrate having a surface of improved levelness and uniformity and preferably surfaced with a water insoluble coating which is desirably finished to maximize flatness and gloss, in order to substantially increase cast coating speed, decrease cast coating consumption and, in many circumstances, improve cast coat quality.

3,829,326

GLASSLINED PRODUCT AND A PROCESS FOR GLASSLINING

Shigeo Soejima and Akira Ohmura, Nagoya, and Koichiro Watanabe, Tokorozawa, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

No Drawing. Filed Oct. 13, 1972, Ser. No. 297,348

Claims priority, application Japan, Jan. 27, 1972, 47/9,429

Int. Cl. C23d *5/02*

U.S. Cl. 117—70 B **6 Claims**

A corrosion-resisting and thermal-shock-resisting article having an iron substrate with a multi-layered glasslining, which includes a ground coat formed on the substrate and a cover coat formed on the ground coat, the cover coat having alternately disposed first enamel coat with a porosity of 5% to 13% and second enamel coat with a porosity of not greater than 4.5%. The first enamel coat contains 0.5% to 10% by weight of refractory ingredients having a particle size of not greater than 150 micon and consisting of silica, alumina, zirconia, titania, and/or mullite. The article is made by applying the ground coat by firing, overlaying one layer of cover enamel slip and one layer of cover coat frit on the ground coat, firing the layers at a temperature of 800° C. to 850° C., and repeating the overlaying and the firing of the layers of the cover enamel slip and the cover coat frit.

3,829,327

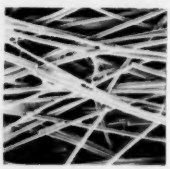
CARBON PAPER

Thomas T. Omori, Glendale, and Hiroshi Imaoka, Gardena, Calif., assignors to Kreha Corporation of America, Gardena, Calif.

Filed July 3, 1972, Ser. No. 268,600

Int. Cl. C01b *31/04;* H01m *13/02*

U.S. Cl. 117—226 **12 Claims**



An electrically conductive, chemically inert, porous, structurally coherent web of carbon fibres which has a carbon coating thereon. The carbon coatings on the respective carbon fibres are intergrown with one another at those locations where the coated fibres contact one another. At least about fifty percent of the volume in the web is void of coated fibres.

3,829,328

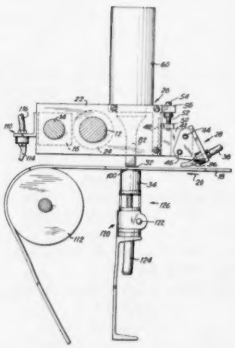
METHOD FOR CLEANING RESILIENT WEBS

Stanley Blustain, Brooklyn, N.Y., assignor to Stam Instruments Corp., Brooklyn, N.Y.

Original application July 13, 1970, Ser. No. 54,172, now Patent No. 3,688,527, dated Aug. 29, 1972. Divided and this application June 13, 1972, Ser. No. 262,408

Int. Cl. B08b *7/00;* D21f *1/32*

U.S. Cl. 134—1 **10 Claims**



A method and apparatus for cleaning mechanically bonded contaminants from a resilient web in a fluid me-

dium wherein longitudinal vibrations of large displacement amplitude are radiated from the output radiator of a generator means to produce periodic perturbations of large displacement amplitude in the fluid medium. Said output radiator is positioned adjacent said web and reflecting means is disposable in facing relation with said output radiator, with said web therebetween, for reflecting said vibrations back into said fluid medium, said reflecting means and output radiator being spaced a distance apart such that the reflected vibrations are substantially in phase with the vibrations radiated into said fluid medium by said generating means output radiator.

3,829,329

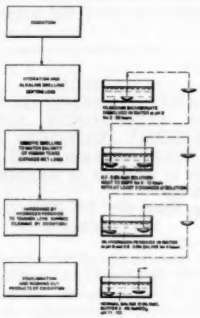
METHOD OF CLEANING A SOFT HYDROPHILIC CONTACT LENS

Kenneth F. O'Driscoll, Williamsville, and Allan A. Isen, Buffalo, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Original application Nov. 30, 1969, Ser. No. 880,828, now Patent No. 3,700,761. Divided and this application Aug. 25, 1972, Ser. No. 283,777

Int. Cl. G02c *13/00*

U.S. Cl. 134—26 **7 Claims**



Graft or block copolymers of hydroxy alkyl methacrylate esters and polyvinyl pyrrolidone are (1) cast in a shaping mold as a monomer-polymer dispersion, polymerized to a solid at 40–60° C. in the presence of low and medium temperature free radical initiators, (2) the solid taken out of the mold and heated to 90–120° C., and then post-polymerized by (3) radiation while dry and by (4) hydrogen peroxide treatment to form hygroscopic, solid, shaped masses which may be cut in the dry state, after step (2), into contact lenses. The lenses may be equilibrated in the wet state by hydrating with normal saline solution. The lenses may be cleaned by treatment with hydrogen peroxide. Steps (3) and (4) toughen the lens, increase its elasticity and its elastic recovery and improve its dimensional stability. From 20–45% by weight of polyvinyl pyrrolidone imparts hygroscopic and unusual water-swelling characteristics. The water-swollen lens contains from 40–80% water, preferably from 50–55%, and in isotonic saline, the water content changes to about 52–58%. As a result of the polyvinyl pyrrolidone incorporation, the lens is readily cleaned after use in the eye with dilute hydrogen peroxide to rid it of imbibed muco-protein, catalase and the like.

3,829,330

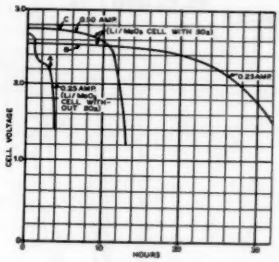
HIGH RATE Li/MoO_3 ORGANIC ELECTROLYTE CELL

Arabinda Narayan Dey, Needham, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of application Ser. No. 853,312, Aug. 27, 1969, now Patent No. 3,808,052. This application Aug. 11, 1971, Ser. No. 170,710

Int. Cl. H01m *35/02*

U.S. Cl. 136—6 LN **9 Claims**



A further improvement in the performance of Li/MoO_3 in terms of the rate capability and the energy density, by the addition of SO_2 in the electrolyte.

3,829,331

SODIUM BORATE GLASS COMPOSITIONS AND BATTERIES CONTAINING SAME

Floris Y. Tsang, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,453

Int. Cl. H01m *3/00*; C03c *3/00, 13/00*

U.S. Cl. 136—146 **5 Claims**

An amorphous glass system based on sodium borate, which may also contain additives to modify viscosity, expansion coefficient, and the like, has found particular utility as the membrane material in alkali metal-sulfur batteries due to its inertness towards sodium, sulfur and sodium sulfide, as well as its excellent ability to conduct sodium ions.

3,829,332

WATERPROOF BATTERY CASE

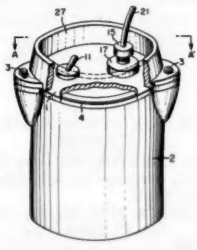
Toru Iizuka and Katsuo Tonooka, Ashikaga, Torahiko Saitoh, Tokyo, and Isao Yasuda, Ashikaga, Japan, assignors to Kohkoku Chemical Industry Co., Ltd., Tokyo, Japan

Filed June 20, 1972, Ser. No. 264,437

Claims priority, application Japan, July 6, 1971, 46/58,868

Int. Cl. H01m *1/06*

U.S. Cl. 136—173 **4 Claims**

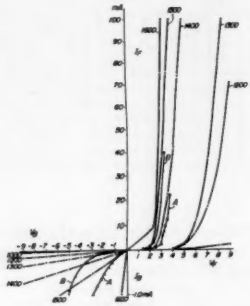


A waterproof battery case, comprising a waterproof switch part and a waterproof cord connector part.

3,829,333
METHOD FOR DIFFUSING AN IMPURITY SUBSTANCE INTO SILICON CARBIDE

Atsutomo Tohi, Hirakata, Kunio Sakai, Kadoma, Masakazu Fukai, Osaka, and Yoshinobu Tsujimoto, Kashiwara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Original application Sept. 6, 1968, Ser. No. 758,058, now Patent No. 3,629,011. Divided and this application July 19, 1971, Ser. No. 164,128
Claims priority, application Japan, Sept. 11, 1967, 42/58,877, 42/58,905
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 2 Claims



Impurity ions are accelerated under an irradiation condition of ordinary temperature or relatively low temperature and injected into silicon carbide from its surface.

The injected silicon carbide is annealed in a temperature range from 1600° to 1200° C. to obtain a P-N-junction and a luminescent diode based on the p-n-junction is thereby prepared.

3,829,334
METHOD OF MANUFACTURE OF A SUPERCONDUCTING MATERIAL

Nikolai Alexandrovich Vitovsky, ulitsa Babushkina 53, kv. 67; Georgy Alexandrovich Vikhly, ulitsa Yakovskaya 8; Tatyana Vadimovna Mashovets, prospekt Morisa Toresa 9; and Solomon Meerovich Ryvkin, Olginszaya ulitsa 9, kv. 9, all of Leningrad, U.S.S.R.

No Drawing. Filed July 24, 1972, Ser. No. 274,294
Claims priority, application U.S.S.R., July 23, 1971, 1679307
Int. Cl. C22f 1/00
U.S. Cl. 148—125 3 Claims

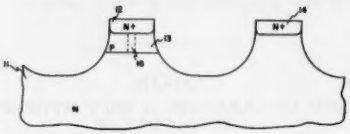
A method of manufacturing a superconducting material from a semiconducting material, such as InSb consisting in that the semiconducting material is first cooled to a temperature which is not higher than 200° K., then microscopic spots on the surface of the semiconducting material are subjected to pressures which are higher than the critical pressure for the semiconductor-metal structural phase transition; these pressures are then relieved.

3,829,335
METHOD FOR PROCESSING SEMICONDUCTOR WAFERS

David F. Allison, Los Altos, and John E. Schweizer, Jr., San Jose, Calif., assignors to Scientific Micro Systems, Inc., Sunnyvale, Calif.

Filed Oct. 20, 1972, Ser. No. 299,606
Int. Cl. H01l 7/44
U.S. Cl. 148—189 7 Claims

A method for processing semiconductor wafers in which emitter-collector shorts are avoided in transistors formed in the semiconductor wafer. Investigation of emitter-collector shorts in semiconductor wafers has demonstrated by use of special etch techniques that emitter collector shorts are caused by dislocations in the crystal lattice of the semiconductor wafer. The dislocations are introduced into the semiconductor wafer during the various processing steps requiring the semiconductor wafer to be maintained at an elevated temperature. The dislocations and hence emitter-collector shorts are avoided by a method in which a semi-



conductor wafer is placed into a furnace at a temperature which is less than that which causes dislocations and then the furnace and hence the semiconductor wafer is heated up with the temperature rising at a rate below that which would introduce thermal stress and cause dislocations. After a desired operating temperature is reached a desired operation is performed on the semiconductor wafer and then the entire semiconductor wafer is cooled at a rate similar to that by which the temperature was previously raised.

3,829,336
PROPELLANTS PLASTICIZED WITH HIGH ENERGY COMPOUNDS AND HAVING HIGH ENERGY POLYMERS AS BINDER

Raymond M. Price, Applegate, Calif., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Oct. 23, 1969, Ser. No. 869,454
Int. Cl. C06d 5/06
U.S. Cl. 149—19.3 4 Claims

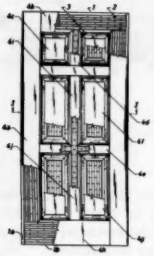
High energy copolymers or terpolymers that have high NF_2 content. The polymers are used in solid propellant compositions and are made by incorporation of small quantities of non-energetic monomer molecules with basic side chain ester groups into energetic difluoramino polymers by copolymerization techniques which increase the affinity of the polymers for acidic difluoramino plasticizers [e.g., TVOPA, 1,2,3-tris(1,2-bis-(difluoramino)ethoxy) propane or OPE, 1,2 - bis[2,2,3 - tris(difluoramino)propoxy]-1,2-bis(difluoroamino)ethane]. Higher plasticizer to polymer ratios result in a higher difluoramino content in the binder system and a correspondent higher energy propellant wherein used. Representative of the non-energetic monomer molecules (also referred to as inert nonfunctional material), are methyl acrylate and methyl methacrylate which are paired in a reaction with a selected energetic difluoramino material such as 2,3-bis(difluoramino)propyl acrylate (NFPA), 2,3-bis(difluoramino) propyl methacrylate (NFPMA), or the like to yield a copolymer. A ternary copolymer is produced when a functional monomer selected from hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, or hydroxypropyl acrylate, is employed along with the paired reactants of the reaction. The resulting ternary copolymer is a prepolymer capable of being cured to form polyurethane polymers. Further, a ternary copolymer having different functionality results when a functional monomer selected from glycidyl methacrylate, glycidyl acrylate, acrylic acid, or methacrylic acid is employed in a reaction with the paired reactants specified above. This type ternary copolymer is capable of being cured to epoxy polymers.

3,829,337

JOINTLESS CONSTRUCTION METHOD OF THE WOODEN PRODUCTS

Paul P. L. Cheng, Taipei, Taiwan, assignor to Fu Shing Mfg. & Lumber Co., Ltd., Taipei, Taiwan

Filed Nov. 12, 1971, Ser. No. 198,172
Int. Cl. B32b *31/04*
U.S. Cl. 156—63 7 Claims



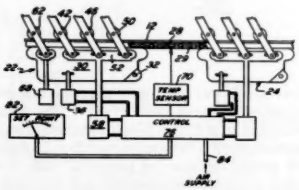
A jointless construction method for fabricating wood products, such as doors, windows and panels, in which exposed portions are made by gluing together a number of pre-sized plywood pieces or thin boards in combination with wood mouldings, strips and/or carvings so as to obtain panels in a large variety of patterns and also capable of inserting glass, lourve blinds, or other attachments, and the inner hidden empty spaces being either densely filled (solid core) or sparsely filled (hollow core) with low grade lumber, plywoods, chipboards, etc., which are glued mutually to the exposed members and overlappedly at their connections to secure rigidity and durability and to form a compact unit.

3,829,338

DOUBLE FACER MACHINE HEAT CONTROL

Nisiki Hayasi, Cherry Hill, and Walter C. Morrison, Vincentown, N.J., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed June 14, 1972, Ser. No. 262,858
Int. Cl. B32b *31/26;* B31f *31/26*
U.S. Cl. 156—64 7 Claims



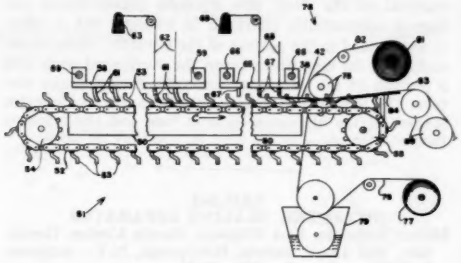
The temperature of the liner on double-face paperboard is measured after said paperboard has been heated in the double facer machine, without physically touching the liner with a calibrated sensor. The temperature signal is converted to a signal which is fed to a comparator to effect a variation of heat transfer from the heat source at the double facer machine when the measured temperature deviates from a selected normal range.

3,829,339

METHOD AND APPARATUS FOR FORMING FINE MESH NONWOVEN WEB

Laurier A. Pinette, Brunswick, Maine, assignor of a fractional part interest to Herbert Ismann, Wiscasset, Maine

Filed Oct. 5, 1972, Ser. No. 295,122
Int. Cl. B32b *5/00, 29/02*
U.S. Cl. 156—179 22 Claims



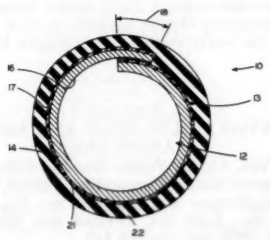
Disclosed is a method and apparatus for producing a nonwoven web comprising two parallel conveyors each of which supports a set of mounting pins wherein each pin is bent to form vertically and horizontally displaced upper and lower yarn retaining portions. A first reciprocating yarn applicator shuttle with a plurality of nozzles loops individual yarn strands around the lower yarn retaining portions to form a web. A second shuttle likewise forms a vertically and horizontally displaced web around the upper yarn retaining portions. The nozzles on the first shuttle are bent to facilitate passage thereof between the upstanding pins and the two webs are laminated to form a single web of a finer mesh.

3,829,340

METHODS OF MAKING A TUBULAR MEMBER HAVING A SEALED LONGITUDINAL SEAM

Matthew R. Dembiak, Clifton, N.J., and George H. Webster, Timonium, Md.; said Dembiak assignor to Western Electric Company, Incorporated, New York, N.Y., and said Webster assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

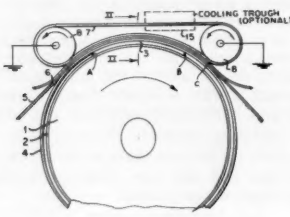
Application Mar. 17, 1971, Ser. No. 125,362, now Patent No. 3,703,605, which is a continuation of abandoned application Ser. No. 809,589, Mar. 24, 1969. Divided and this application Aug. 2, 1972, Ser. No. 277,188
Int. Cl. B29d *23/10*
U.S. Cl. 156—201 10 Claims



Successive portions of an aluminum tape having one major surface thereof coated with an adhesive copolymer across the entire transverse width thereof and the other

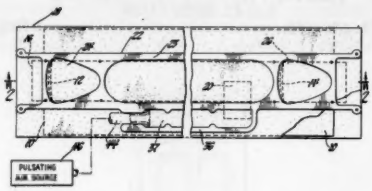
major surface precoated with a stripe of adhesive material along an edge portion are folded longitudinally as the successive sections of the tape are being advanced along a predetermined path to form an overlapped seam so that the adhesive copolymer on an edge portion of the one major surface of the tape overlaps the stripe. Subsequently, the adhesive materials on the major surfaces along the overlapped seam develop an adhesive bond by the application of heat and pressure prior to or during the extrusion of a plastic jacket over the tape. The adhesive material on the other, now inwardly facing, major surface is substantially restricted in location and is adhesively bonded to the portion of the inwardly facing major surface of the tape which forms the overlapped seam with a portion of the one, now outwardly facing, major surface. The remaining portion of the inwardly facing major surface of the aluminum tape is bare and the resulting tubular member may be used in a variety of ways.

3,829,341
DIELECTRIC SEALING APPARATUS
Milton Rothstein, East Williston, Martin Kaplan, Oceanside, and Lloyd Barton, Hauppauge, N.Y., assignors to Solidyne, Inc., Brooklyn, N.Y.
Filed Oct. 13, 1972, Ser. No. 297,305
Int. Cl. B29c *19/02*
U.S. Cl. 156—380 **40 Claims**



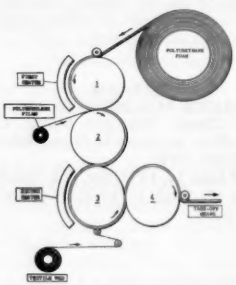
A dielectric heat sealing apparatus includes a rotatable drum and a drum buffer spaced from, and at least partially axially overlaying the circumference of said drum, the buffer being attached to the drum to rotate therewith. The buffer and drum surface are preferably made of slippery, insulating materials, such as polytetrafluoroethylene-impregnated fiberglas. A metallic electrode is interposed in the space between the drum buffer and the drum surface, and a movable metallic belt is pressed against the drum buffer over a predetermined portion thereof to press a workpiece which is to be sealed between the metallic belt and the drum buffer. Upon application of radio frequency voltage between the belt and metallic electrode, the workpieces are dielectrically heated to seal same.

3,829,342
LAMINATED LIQUID PUMP AND METHOD OF MAKING SAME
Bert C. Prisk, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.
Original application May 18, 1970, Ser. No. 38,353, now Patent No. 3,689,204. Divided and this application Feb. 14, 1972, Ser. No. 226,142
Int. Cl. B32b *31/00*
U.S. Cl. 156—257 **4 Claims**



A liquid pump is formed by superposing several sheets of thin flexible material which may be fused together, for example, polyvinyl chloride. The flexible sheets form a displacement chamber, an air pressure operated pump chamber, inlet and outlet passages and check valve flaps in the passages. The valve flaps are formed from the flexible sheets by slitting in appropriate places or are provided by separate flexible sheets. The several sheets are laminated by applying heat and pressure in a predetermined pattern to provide the essential pump elements. The pumping air chamber may be omitted.

3,829,343
PROCESS FOR LAMINATING A FOAM PLASTICS MATERIAL WITH A SHEET-LIKE MATERIAL
Hans-Jürgen Remmert, Wiesbaden, Germany, assignor to Koepp Aktiengesellschaft, Ostrich, Rheingau, Germany
Filed Feb. 17, 1972, Ser. No. 227,110
Claims priority, application Austria, Feb. 19, 1971, A 1,444/71
Int. Cl. C09j *5/00*
U.S. Cl. 156—322 **11 Claims**

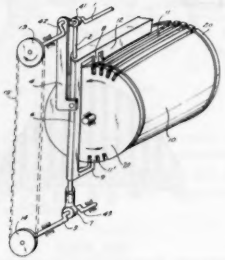


Previous laminates of foam plastics materials with a sheet-like material have been prepared by flame laminating with the use of a costly polyurethane hot-melt adhesive with unsatisfactory adhesive properties. Laminates having improved properties can be prepared with the use of an inexpensive melt or thermoplastic adhesive film by a process comprising softening a surface of the foam material by applying thereto an amount of heat such that an insufficient amount of melted or decomposition products are obtained to enable a lasting adhesive bond to be made between the two materials, uniting the softened foam material surface with a film of melt adhesive, melting the film and contacting the sheet-like material with the melt to form an integral lined foam material. The laminate can be made poromeric or able to "breathe" by appropriately selecting the thickness of the thermoplastic adhesive film.

3,829,344
MACHINE FOR PRODUCING NONWOVEN FLOOR COVERINGS

Stoyan Iliev Julev, Mihail Yordanov Milkov, Lyubomir Petrov Dachev, Rosen Petrov Vasilev, Vasil Alexandrov Kostov, and Jacky Sivcho Aroyo, Sofia, Bulgaria, assignors to DSO "Textil," Sofia, Bulgaria

Filed Mar. 2, 1973, Ser. No. 337,694
Int. Cl. D04h *11/08;* B31f *1/20*
U.S. Cl. 156—435 19 Claims

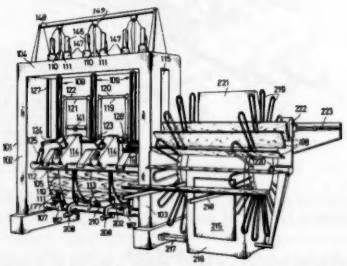


A machine for making nonwoven floor coverings. A felt layer is rammed into grooves, formed in a drum, by a "flying" ramming tool moving to follow each groove, the ramming tool being driven by crank mechanism, the guide of this mechanism being a connecting rod hinged parallelogram. The drum is continuously turned over by two opposite cogs rigidly connected with the ramming tool by a frame which moves therewith. The felt with the folds on the drum is adhered by a binding substance, which is cured or dried on the drum surface.

3,829,345
PROCESS AND APPARATUS FOR POSITIONING SHEETS

Gerhard Ortel, Rietberg, Westfalen, Germany, assignor to Heinrich Kuper, Rietberg, Westfalen, Germany

Continuation-in-part of application Ser. No. 800,757, Feb. 18, 1969, now Patent No. 3,686,057. This application May 3, 1972, Ser. No. 249,893
Claims priority, application Germany, Feb. 21, 1968, P 16 28 989.7; Austria, Aug. 20, 1968, A 8,104/68
Int. Cl. B32b *5/12*
U.S. Cl. 156—393 17 Claims

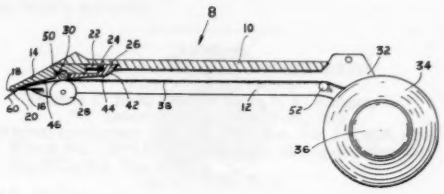


Apparatus for constructing an extended sheet from strips of material, comprising a supply of the strips, a rotating spider extracting strips one by one from the supply, a ram inserting the strips sequentially and endwise into a part of the apparatus which locates them edgewise together, and a supply of threads one of a pair of which engages alternate (front and back) sides of successive strips under control of a reversing (weaving) mechanism, the threads carrying thermoplastic adhesive, and heaters which press the threads on to the strips and cause them to be adhered in place.

3,829,346
TAPE APPLICATOR

Donald E. Sullivan, 1493 Fahlander Drive S., Columbus, Ohio 43229

Filed Dec. 12, 1972, Ser. No. 314,425
Int. Cl. B65c *11/00*
U.S. Cl. 156—527 9 Claims

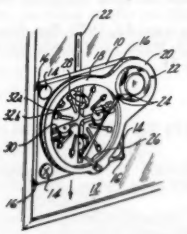


A tape dispensing, applicating and cutting device formed with a U-shaped channel body, a tape supply roll at its rearward end for supplying tape longitudinally through the channel and a reciprocatingly mounted forward tip member with a burnishing surface which is movable against a cutting blade mounted rearwardly of the burnishing surface and extending forwardly for severing interposed tape. A manually drivable, knurled, advancing roller and a radially adjacent resilient idle roll permit precise, manual, tape advance. The tape is easily cut at the burnishing surface by tilting the device to a substantially vertical orientation and depressing it downwardly against the graphic workpiece thereby sliding the burnishing surface against the cutter blade and severing the interposed tape.

3,829,347
INSTRUMENT FOR APPLYING TAPE TO A PLANAR SURFACE

Richard P. Honea, Flint, Mich. (4416 Wheatland Drive, Swartz Creek, Mich. 48473)

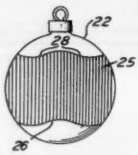
Filed Feb. 14, 1973, Ser. No. 332,358
Int. Cl. B44c *7/00;* E04d *15/00*
U.S. Cl. 156—577 12 Claims



A plate is movable in registration with a guide edge and carries a tape roll. The tape is applied to a planar surface through a slotted portion of the plate in a uniformly spaced pattern relative to the guide edges. Included is a device for making right-angle turns, such as in the case of window frames, in which the tape is of the electrically conductive type and forms a part of an electrical alarm system actuable responsive to breaking of the

window and the tape. The device for making the right-angle turns includes a pair of slidable knife-edge members, each movable into a successive engagement with the tape to make a pair of bends, thus providing a composite 90° turn.

3,829,348
DECORATIVE THREE-DIMENSIONAL OBJECTS
Jacob Spiegel, Philadelphia, Pa., and Albert R. Miller, Somerdale, N.J.; said Miller assignor to Gilbreth Company, Philadelphia, Pa.
Filed Apr. 7, 1972, Ser. No. 242,050
Int. Cl. A47g *33/08, 33/16;* **B29c** *27/00*
U.S. Cl. 161—16 **5 Claims**

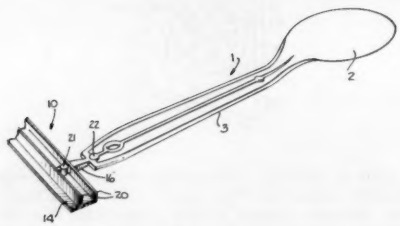


A method of decorating objects rapidly is provided. A band of heat-shrinkable plastic is provided with a decorative pattern and is placed on the object. Heat is applied to the band causing it to shrink and conform to the shape of the object being decorated.

3,829,349
COLLAPSIBLE ARTIFICIAL TREE
Terry Hermanson, New York, N.Y., assignor to Mr. Christmas, Incorporated, New York, N.Y.
Filed July 17, 1973, Ser. No. 379,969
Int. Cl. A47g *33/06*
U.S. Cl. 161—24 **8 Claims**

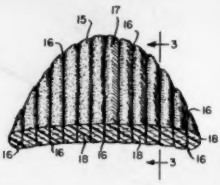
A collapsible artificial tree arrangement particularly adapted for Christmas decoration in which simulated branches are freely foldable substantially parallel to the trunk thereof in one direction for storage and freely pivotable to an erected condition for display. The arrangement including an elongated trunk core and a plurality of sectional trunk portions disposed therearound with some of said trunk portions having branch holding sockets and other of said trunk portions serving as spacing members.

3,829,350
ASSEMBLY BLANK FOR PLASTIC UTENSILS
Samuel R. Davis, Jr., and Harry A. Watson, Federalsburg, Md., assignors to Ipco Hospital Supply Corporation, Valhalla, N.Y.
Filed Aug. 11, 1972, Ser. No. 280,045
Int. Cl. B35b *1/04;* **B65d** *79/00, 83/00*
U.S. Cl. 161—41 **6 Claims**



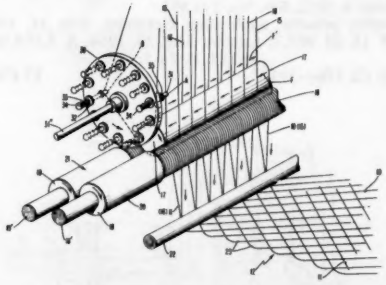
The present invention is directed to an assembly blank for plastic articles such as spoons, forks, etc., in which a plurality of utensils are molded on a frame with the handles in opposite relation to each other and wherein the frame has reinforcing means to permit the utensils to be easily severed therefrom.

3,829,351
STIFFENING MATERIAL FOR SHOE PARTS
Addison W. Closson, Cambridge, and Harry L. Beckwith, Dedham, Mass., assignors to Beckwith Corporation, Wakefield, Mass.
Filed Sept. 28, 1972, Ser. No. 293,078
Int. Cl. A43c *13/14;* **D/04h** *5/02*
U.S. Cl. 161—50 **12 Claims**



This invention provides a stiffening material for shoe parts comprising a non-woven fabric impregnated with a resin. The fabric comprising a self-sustaining batt of non-woven fibers extending generally in the widthwise direction of the fabric and a plurality of rows of yarn stitches extending generally in the lengthwise direction of the fabric. The rows are spaced apart a distance less than the average length of said fibers.

3,829,352
ARMORED FLAT GLASS AND METHOD OF MAKING IT
Jakob Hermanns, Stolberg, Germany, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France
Filed Aug. 2, 1971, Ser. No. 168,016
Claims priority, application France, Aug. 4, 1970, 7028666
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 **14 Claims**

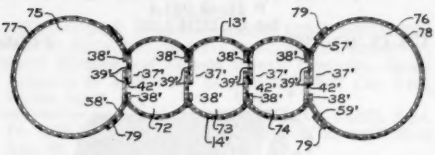


Armored flat glass is made by simultaneously forming a continuous ribbon of glass and weaving the armor into it.

3,829,353
METHOD OF MAKING INFLATABLE ASSEMBLY WITH BULKHEADS AND RESULTING ARTICLE
John M. Fisher, 622 Sackett Ave., Cuyahoga Falls, Ohio 44221
Filed Mar. 21, 1973, Ser. No. 343,442
Int. Cl. A62b *1/20;* **A47c** *27/08;* **D03d** *11/02*
U.S. Cl. 161—92 **9 Claims**

An inflatable assembly made from structural members of two-ply woven fabric coated on the outside with seal-

ing material and having spaced apart interwoven connections. One ply is cut close to the interwoven connections to provide narrow flaps and at a distance from the interwoven connections to provide wide flaps. The narrow flaps are adhered to the wide flaps to prevent pulling out of



the cut portions of the plies at the interwoven connections. Two or more structural members are assembled into an inflatable assembly by adhering together the ends of the wide flaps of overlapping structural members to form bulkheads in the assembly.

3,829,354

HYDROGEN SULFIDE-MODIFIED EPOXY RESINS AND FLEXIBLE LAMINATES THEREFROM

James L. Bertram, Lake Jackson, Ross C. Whiteside, Jr., Angleton, and Preston H. Franke, Jr., Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 185,893, Oct. 1, 1971. This application Feb. 23, 1973, Ser. No. 335,379

Int. Cl. C08g *45/06;* **B32b** *27/38;* **B32b** *27/04*

U.S. Cl. 161—88 **6 Claims**

Mixtures of the diglycidyl ethers of a bisphenol such as bisphenol A and a diglycidyl ether of an aliphatic polyhydroxyl containing compound such as the diglycidyl ether of neopentyl glycol are modified with hydrogen sulfide to produce epoxy resins which when cured with an aminated polyglycol are useful in the preparation of flexible laminates.

3,829,355

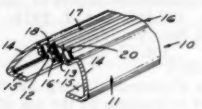
MECHANICAL ATTACHMENT FOR THERMOPLASTIC MATERIAL TO A BASE SHEET

Ramon J. Ascencio, Dearborn, Mich., assignor to Douglas & Lomason Company, Detroit, Mich.

Filed Mar. 8, 1972, Ser. No. 232,855

Int. Cl. B32b *3/10*

U.S. Cl. 161—114 **20 Claims**



An interlocked composite finish product includes relatively rigid, apertured metallic base member, a finish strip or sheet of an appropriate thermoplastic composition juxtaposed in relation to the base, and one or more heat-conductive interlocking clips or grommet-like inserts of relatively thin gauge stamped sheet metal each of substantially less area than the base and the strip. In preferred forms the interlock or clip element has an indented, depressed or cupped portion received in an aperture of the base member, with a tab or flange formation of the element overlying a margin of the base aperture, thus engaging a side of that member opposite the surface or side engaged by the thermoplastic finish member. The finish member initially presents a substantially uninterrupted surface engaging flush with the last-named base member side, with the interlock clip or insert element engaging the thermoplastic through the base member's aperture. When said element is heated above the melting point of the thermoplastic material, the latter softens under mild pressure and conducted heat, and extrudes about and/or through said element into a mechanical interlock, when the material has cooled and set, with the base member, in certain instances through the agency of the clip or insert element alone. However, in some contemplated embodiments the element may be removed after thermal displacement and setting of the plastic composition finish material, having served as a form confining the zone of the latter's extrusion.

3,829,356

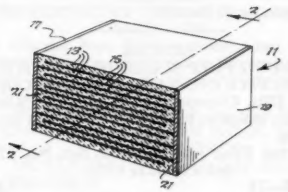
SINTERED CERAMIC BODIES WITH POROUS PORTIONS

Truman C. Rutt, Niagara Falls, N.Y., assignor to NL Industries, Inc., New York, N.Y.

Original application Apr. 16, 1971, Ser. No. 134,689, now Patent No. 3,679,950. Divided and this application Jan. 24, 1972, Ser. No. 220,536

Int. Cl. B32b *5/18*

U.S. Cl. 161—161 **9 Claims**



A sintered ceramic article which comprises internal electrodes and/or conductors is formed by producing a sintered ceramic body that has areas of ceramic with interconnected pores extending to an outer face thereof and providing a conductor in said porous areas. The ceramic body may be formed by depositing, as by screen printing, on sheets of a powdered dielectric or insulating ceramic material bonded with a temporary bond, an area of a temporarily bonded powdered ceramic material which on firing becomes porous, consolidating a plurality of such sheets, and sintering them. Subsequently a conductive material may be provided in the porous areas by impregnating said areas with a conductive material or with a material which is reacted or decomposed to form a conductive material in said areas.

3,829,357

OXIDATIVE MANUFACTURE OF PULP WITH CHLORINE DIOXIDE

Norman S. Thompson, Gordon A. Nicholls, and Shu-Tang Han, Appleton, Wis., assignors to The Institute of Paper Chemistry, Appleton, Wis.

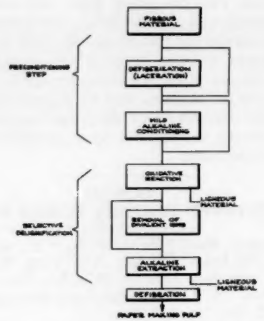
Continuation of abandoned application Ser. No. 777,241, Nov. 20, 1968. This application Feb. 26, 1971, Ser. No. 119,383

Int. Cl. D21c *1/02, 3/18*

U.S. Cl. 162—23 **7 Claims**

A process for producing papermaking pulp by first preconditioning the initial wood materials by lacerating the materials at a temperature above the thermal softening point of the lignin therein into fiber bundles, and second delignifying the lacerated material. The delignification includes digesting the materials with an oxidative chemical

such as chlorine dioxide, peracids, ozone, or noble gas oxides, extraction of some of the lignin by alkaline treatment, and optional further defibration via mechanical or chemical treatment. The preferred oxidative chemical is



chlorine dioxide, and the oxidative treatment is terminated when the residual lignin content of the wood material, measured as Klason lignin, is above 50% of the original Klason lignin content.

3,829,358

GROUNDWOOD PULP BLEACHING WITH SODIUM HYDROSULFITE CONTAINING DIGLYCOLATES

Leonard C. Ellis, Chesapeake, and Mearl A. Kise, Portsmouth, Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

No Drawing. Filed July 11, 1972, Ser. No. 270,690
Int. Cl. D21c *9/10*
U.S. Cl. 162—71 **4 Claims**

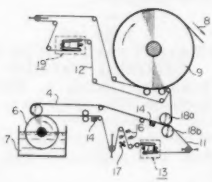
A groundwood pulp slurry is bleached with an aqueous solution of sodium hydrosulfite and a salt of diglycolic acid while maintaining the pH of the slurry between 4.1 and 6.3.

3,829,359

PAPER MAKING MACHINE HAVING ONCE-TWISTED ENDLESS FELTS

Koichi Tsujibayashi, Tokyo, Japan, assignor to Nippon Felt Co., Ltd., Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,199
Claims priority, application Japan, Aug. 31, 1970, 45/75,586, 45/75,587
Int. Cl. D21f *1/32*
U.S. Cl. 162—274 **2 Claims**



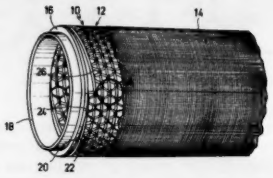
A paper making machine having mechanisms for once-twisting endless felts by about 180 degrees using two or more felt twist rolls within a region where the felts are free from contact with a processing paper sheet for an effective mitigation of accumulation of contaminative materials.

3,829,360

ROLLER HAVING A CYLINDRICAL SURFACE OF FLAT BELTS AND CORRUGATED BELTS

Emil Holz, Eningen, Germany, assignor to Herman Finckh Metalltuch-und Maschinenfabrik, Reutlingen, Wurttemberg, Germany

Filed Sept. 26, 1972, Ser. No. 292,349
Claims priority, application Germany, Sept. 28, 1971, P 21 48 361.4
Int. Cl. D21f *1/60*
U.S. Cl. 162—357 **6 Claims**



A roller, particularly for use in paper making machines, and providing flow-through openings between the body of the roller and a woven cover enclosing the body. The body is of cylindrical configuration and has peripherally disposed flat belts which are connected together by belts that are corrugated in the peripheral direction. The flow-through openings are provided at the connecting points between the flat and corrugated belts.

3,829,361

METHOD FOR ATTENUATION OF MUMPS VIRUS

Masao Hoshino, Suita, Osaka, and Yuushi Oka, Takarazuka, Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,193
Claims priority, application Japan, Apr. 30, 1971, 46/29,116
Int. Cl. C12k *5/00, 7/00*
U.S. Cl. 195—1.3 **8 Claims**

Novel and effective attenuated live mumps virus vaccines are produced by subjecting mumps virus to passages in a tissue culture containing primary bovine kidney cells until sufficient attenuation is attained.

3,829,362

PROCESS FOR ENZYMATICALLY ISOMERIZING GLUCOSE TO FRUCTOSE

Robert Otto Horwath, Westport, and Gary William Cole, Southport, Conn., assignors to Standard Brands Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 187,506, Oct. 7, 1971. This application July 27, 1973, Ser. No. 383,209
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 F **9 Claims**

Glucose in a glucose-containing solution is enzymatically isomerized to fructose by the use of glucose isomerase derived from microorganisms of the genera *Nocardia, Micromonospora, Microbispora* and *Microellobospora.*

3,829,363

PROCESS FOR THE PRODUCTION OF HIGH QUALITY FUNGAL PROTEIN FROM STARCH AND STARCHY PROCESSING WASTES

Charles J. Rogers and W. Emile Coleman, Cincinnati, Ohio, assignors to the United States of America as represented by the Administrator of the Environmental Protection Agency

No Drawing. Filed June 29, 1972, Ser. No. 267,414
Int. Cl. C12b *1/00*
U.S. Cl. 195—32 **8 Claims**

Fungal protein suitable as an additive for animal feeds, and as a human food supplement, is produced from

starchy substrate materials, particularly potatoes and potato wastes, by homogenizing the starchy material and then subjecting it in a suitable mineral salt containing culture medium to the action of a strain of *Aspergillus niger*, and recovering the protein from the mold mycelia.

3,829,364

CONTINUOUS ANODIC OXIDATION METHOD FOR ALUMINUM AND ALLOYS THEREOF

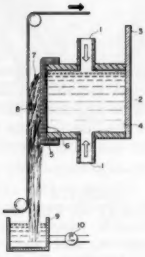
Takeshi Hamabe and Takashi Suzuki, Toyonaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 72,022, Sept. 14, 1970, now Patent No. 3,682,640. This application Aug. 30, 1972, Ser. No. 284,730

The portion of the term of the patent subsequent to Sept. 19 ,1989, has been disclaimed

Int. Cl. B01k *3/00*; C23b *9/02*

U.S. Cl. 204—28 **5 Claims**



A method of continuously forming an oxide film on aluminum and alloys thereof by anodic oxidation without resorting to a conventional process of conducting the anodic oxidation within a cell containing an electrolyte.

On the other hand, according to the method of this invention, the electrolyte contained in a container of a cathode device is discharged from a discharge port and through a liquid-permeable material covering the discharge port and flows down along the surface of aluminum article being advanced in front of the liquid permeable material with a small gap or in contact with the same.

A voltage is impressed between the cathode device and the aluminum article through the down flowing electrolyte, therefore, no substantial temperature rise of the electrolyte is encountered which brings about anodizing defects such as yellowing of the oxide film.

3,829,365

METHOD OF OPERATING A CELL FOR THE RECOVERY OF ALUMINUM BY ELECTROLYSIS OF ALUMINUM OXIDE IN A FLUORIDE MELT

Kiranendu Chaudburi, Gampel, and Peter Bachofner, Liebefeld, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

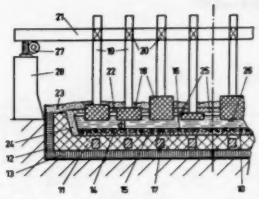
Filed July 10, 1973, Ser. No. 378,033

Claims priority, application Switzerland, July 18, 1972, 10,751/72

Int. Cl. B01k *3/00*; C22d *3/12*

U.S. Cl. 204—67 **3 Claims**

Method of operation of a cell for recovery of aluminum by electrolysis of aluminum oxide in a fluoride melt. In the melt the values of instantaneous resistance of the cell are calculated from instantaneous values of cell current intensity and cell voltage which are sampled by a computer at regular intervals of time during electrolysis, except during periods associated with anode effects and with manipulations on the cell, the absolute difference between each value of instantaneous resistance and the base resistance



of the cell is added to a cumulative total; a disturbance is indicated when the cumulative total exceeds a predetermined value, whereupon the resistance of the cell is raised until the cause of the disturbance is eliminated.

3,829,366

TREATMENT OF TITANIUM CATHODE SURFACES

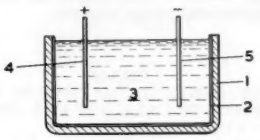
Andrew George Ives, Kidderminster, and John Philip Atkinson, Wortley, Birmingham, England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, Warwickshire, England

Filed Oct. 27, 1972, Ser. No. 301,339

Claims priority, application Great Britain, Nov. 5, 1971, 51,489/71, 51,490/71

Int. Cl. C22d *1/00*; C23b *7/04, 11/02*

U.S. Cl. 204—105 R **18 Claims**



A method of extracting metal from an electrolyte is described using a particular cathode which has been treated by immersion and/or anodisation in a substantially fluoride free alkaline aqueous solution of an organic complexing agent for titanium. The cathode itself is also described.

3,829,367

ELECTROLYTIC POLISHING OF METALS

Samuel Raviv, 8 Deborah St., Beer-Sheba, Israel

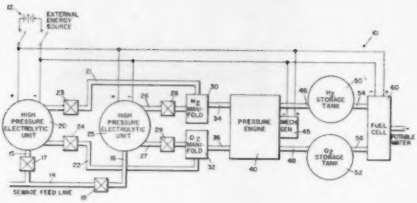
No Drawing. Continuation-in-part of abandoned application Ser. No. 101,437, Dec. 24, 1970. This application July 14, 1972, Ser. No. 271,933

Int. Cl. C23b *3/06*

U.S. Cl. 204—129.95 **10 Claims**

Electrolytic polishing of a metal body. In a first stage intergranular corrosion of the body is induced by electrolytic cathodic treatment in an acidic electrolyte containing a copper salt. In a second stage the polarity is reversed and the body is subjected to electrolytic anodic treatment. The electrolyte in the second stage may be the same as in the first stage or different.

3,829,368
OXYGEN-HYDROGEN GENERATION AND SEWAGE TREATMENT METHOD AND SYSTEM
Robert B. Wesley, 6834 Old Channel Trail, Montague, Mich. 49437
Filed Mar. 2, 1972, Ser. No. 231,284
Int. Cl. C02b *1/82;* **C02c** *5/12*
U.S. Cl. 204—149 **37 Claims**



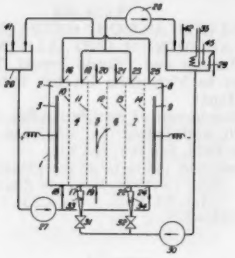
An apparatus and method comprising a regenerative sewage treatment system for decomposing sewage into its constituent elements, including primarily oxygen and hydrogen gases, under greater than ambient pressures, and, subsequently, utilizing the pressurized elemental gases and the recombination of those element gases to generate sufficient energy to nearly completely sustain the operation of the system and to produce potable water. The system, in the preferred embodiment, includes a high-pressure electrolytic unit for producing pressurized gases of decomposition, a pressure engine and mechanical electrical generator for converting the potential energy of the pressurized gases to kinetic and electrical energy, an oxygen-hydrogen fuel cell for producing potable water and additional amounts of electrical energy, and an external energy source for supplying initial start-up energy and any supplemental energy required.

3,829,369
4-METHOXY BENZENE DIAZONIUM HEXAFLUOROPHOSPHATE CATALYST FOR PHOTOPOLYMERS IN EPOXY SYSTEMS
Jacob Howard Feinberg, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.
No Drawing. Filed Oct. 19, 1972, Ser. No. 298,847
Int. Cl. B01j *1/10;* **C08d** *1/00*
U.S. Cl. 204—159.11 **20 Claims**

A process for polymerization of epoxide monomers and prepolymers employing 4-methoxybenzene diazonium hexafluorophosphate as a latent radiation-sensitive initiator comprising subjecting admixtures of the catalyst and epoxide to the application of energy.

3,829,370
METHOD FOR FORCED FLOW ELECTROPHORESIS
Guy Bourat, Bourg-La-Reine, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed Mar. 28, 1972, Ser. No. 238,764
Claims priority, application France, Mar. 30, 1971, 7111180
Int. Cl. B01d *13/02*
U.S. Cl. 204—180 P **8 Claims**

A continuous forced flow electrophoresis cell and a method of operation for the fractionation of an aqueous liquid, such as blood, containing at least two compounds, the relative mobilities of which in an electric field vary as a function of the pH, in order to obtain one fraction enriched and one depleted in one of the compounds, the cell having six compartments divided by ion permeable membranes, the end cell containing an anode and cathode respectively, the central cells being separated by a microporous membrane. The liquid is fed to one of the central cells the filtered fraction being removed, after passage through the microporous membrane, from the other. A main electrolyte is fed to and from the end cells and an auxiliary electrolyte to the intermediate cells such that the pH in one intermediate cell differs from that of the other.



3,829,371
METHOD FOR COATING THE SURFACE OF A METALLIC MATERIAL
Shinsuke Miki, Neyagawa, and Takao Nishida, Suita, Japan, assignors to Amchem Products, Inc., Ambler, Pa.
No Drawing. Filed Mar. 5, 1971, Ser. No. 121,527
Claims priority, application Japan, Mar. 6, 1970, 45/19,102
Int. Cl. B01k *5/02;* **B32b** *15/08;* **C23b** *13/00*
U.S. Cl. 204—181 **14 Claims**

A method for coating the surface of a metallic material which comprises immersing the metallic surface in an aqueous composition comprising a film-forming polymer, an acid and an oxidizing agent, passing a direct electric current between the metallic surface, as a primary electrode, and a secondary electrode and withdrawing the metallic surface from the aqueous composition, followed by baking the coated surface.

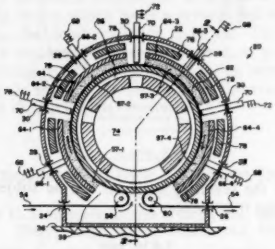
3,829,372
MULTILAYER MAGNETIC STRUCTURE AND METHODS OF MAKING SAME
Johannes Heller, Eschenbrunnlestr, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed May 25, 1972, Ser. No. 257,041
Int. Cl. C23c *15/00;* **H01f** *10/02*
U.S. Cl. 204—192 **5 Claims**

A multilayer magnetic structure comprising at least four alternating layers of a magnetic material and its oxide, upon a substrate, whereby a desired combination of magnetic properties and wear resistance is achieved. A method of making is also disclosed. Uses include magnetic disk storage applications.

3,829,373
THIN FILM DEPOSITION APPARATUS USING SEGMENTED TARGET MEANS
Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Information Systems, Inc., Bedford, Mass.
Filed Jan. 12, 1973, Ser. No. 322,968
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **20 Claims**

Apparatus for coating a thin film upon substrate means in a pressure vessel using the plasma vapor deposition

technique known as sputtering. The substrate means are arranged on the exterior of a cylindrical drum for rotation and have the convex surface thereof exposed to the plasma vapor during rotation. An assembly of a plurality of circumferentially spaced arcuate target segments forming generally a cylinder is arranged coaxially and telescopically with respect to the drum whereby to form an annular belt of plasma vapor cloud segments occupying the gap exterior of the drum between the target means and the drum. Thhe target means comprise the cathode of the high voltage electrical circuit and the drum comprises the anode.



The projecting unit target area is larger than the unit exposed substrate area enabling radially converging plasma vapor and hence high rates of uniform coating.

The drum may rotate the substrate means in the belt repeatedly or serve as transport means to bring the substrate means through the belt on one pass. The cylindrical belt is not closed but has a discontinuance which is somewhat greater than the distance between target segments. The substrate means are led onto the drum from the exterior of the assembly of target segments and likewise led off the drum and conveyed to the exterior of the assembly of target segments by way of such discontinuance.

3,829,374

ELECTRODE WITH PROTECTIVE COATING

Tibor Kugler, Thayngen, and Hans Wolfhart Rieger, Beringen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 15, 1972, Ser. No. 306,633
Claims priority, application Switzerland, Nov. 16, 1971, 16,683/71
Int. Cl. B01k *3/04, 3/08;* **C22d** *3/12*
U.S. Cl. 204—290 R **9 Claims**

An electrode, especially an anode for electrolytic production of aluminium, is protected against oxidation in service by means of a coating consisting of a material which has been applied as particles at least partly molten at high temperature, and has solidified in situ, so that in the coating the said particles are bonded together over at least a part of their exterior. The coating material includes aluminium oxide and facultatively aluminium, both then being applied simultaneously as a cermet or as successive layers in sandwich structure. The coating has preferably a thickness of 0.1 to 1.0 mm. and has suitably been applied by means of a plasma burner.

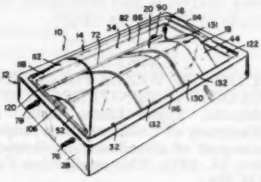
3,829,375

ELECTROLYTIC CELL MEANS

Leo P. Cawley, Box 8152, Wichita, Kans. 67208

Continuation-in-part of application Ser. No. 297,638, Oct. 16, 1972, now Patent No. 3,798,152. This application Nov. 2, 1973, Ser. No. 412,631
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **7 Claims**

An electrolytic cell means for immunodiffusion comprising a tray with a bottom, a first side having a first annulus therein, a second side including a second annulus therein, and a pair of ends. An enclosed heat transfer fluid reservoir is integrally bound to the sides and has an inlet and an outlet for circulating a heat transfer fluid therethrough. The enclosed reservoir additionally has an essentially parabolic shaped roof connected to the sides, and a pair of ends attached to the bottom, sides, and to the roof. The annuli are in communication with the roof and



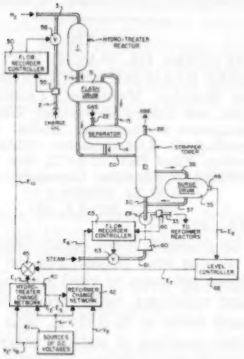
the inlet and the outlet. The parabolic shaped roof has a first sloping portion and a second sloping portion. The first side and the first sloping portion define a trough which has an electrode secured therein, and the second side and the second sloping portion define another trough which has another electrode secured therein which is oppositely charged from the other electrode. An electrical source is connected to the two electrodes.

3,829,376

APPARATUS AND METHOD FOR CONTROLLING THE LEVEL OF OIL IN A SURGE DRUM

Walker L. Hopkins, Houston, Leland A. Chvatal, Port Arthur, and William D. White, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,322
Int. Cl. C10g *23/00*
U.S. Cl. 208—89 **9 Claims**



Apparatus controls the level of oil in a surge tank in a processing unit of a refining system, receiving a charge liquid and which in turn provides a charge liquid to a second processing unit of the refining system. A signal is provided corresponding to a desired change ΔF_R to be made in the flow rate of the second processing unit charge liquid. A first change network receiving the change signal determines the magnitude of the desired change to the second processing unit charge liquid flow rate and provides a flow rate signal for controlling the first processing unit charge liquid flow rate in accordance with the desired change signal. The change ΔF_H in the first processing unit charge liquid flow rate may be equal to or

some portion of the change ΔF_R to be made in the second processing unit liquid flow rate depending on the magnitude of the change signal. The change ΔF_H differs in different proportions depending on the magnitude of the change ΔF_R. The network includes an absolute value circuit which provides a signal corresponding to the magnitude of the change signal. The change in the second processing unit charge liquid flow rate is delayed for a predetermined time interval and then implemented. The duration of the time interval is also determined as a function of the magnitude of the change ΔF_R.

3,829,377

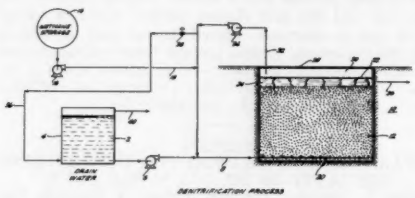
REDUCTION OF WATER POLLUTION BY BIOLOGICAL DENITRIFICATION

Saburo Hashimoto, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of abandoned application Ser. No. 89,976, Nov. 16, 1970. This application Feb. 7, 1973, Ser. No. 330,300

Int. Cl. C02c *1/14*

U.S. Cl. 210—11 **10 Claims**



A process for the biological denitrification of water that contains soluble nitrates is disclosed. In the process, the water is contacted with anaerobic bacteria and a normally gaseous C_1 to C_3 hydrocarbon for a time sufficient to degrade the nitrate ions, biologically, to innocuous nitrogen.

3,829,378

PURIFICATION OF WASTE WATER FROM STYRENE BEAD POLYMER PRODUCTION

Hans-Georg Keppler, Weinheim, Ludwig Zuern, Bad Duerkheim, and Erhard Stahnecker, Ziegelhausen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 2, 1972, Ser. No. 294,461

Claims priority, application Germany, Oct. 7, 1971, P 21 50 056.1

Int. Cl. B01d *21/01*

U.S. Cl. 210—42 **1 Claim**

Process for purifying waste water obtained in the production of styrene bead polymers in the presence of vinyl pyrrolidone polymers or vinyl alcohol polymers used as suspension stabilizers, which process comprises treating said waste water at 70–180° C. with 0.02 to 5% by weight of the persulfate of sodium, potassium or ammonium in order to flocculate the suspended matter.

3,829,379

PROCESS FOR TREATING ALDEHYDES

Shinichi Ishida, Tokyo, Noboru Oshima, Yokohama, Kunio Kurita, Kawasaki, Isamu Suzuki, Yokohama, and Hidetoshi Ohno, Kamakura, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha

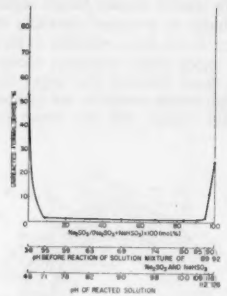
Filed Feb. 25, 1972, Ser. No. 229,326

Claims priority, application Japan, Feb. 27, 1971, 46/9,794, 46/9,795; May 18, 1971, 46/32,928

Int. Cl. C02c *1/40*

U.S. Cl. 210—18 **4 Claims**

A gas or solution containing aldehydes such as formaldehyde, is contacted with a sulfite of alkali metals or ammonium or a mixture of 100 to 5% by weight of the sulfite and 0 to 95% by weight of bisulfite of alkali metals or ammonium, while keeping pH of a treating system at 6–



11, and/or the resulting solution can be subjected to activated sludge treatment.

3,829,380

METHOD AND APPARATUS FOR CLEANING WASTE LIQUID CONTAINING DILUTED DYE

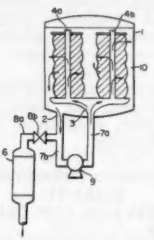
Saburo Oohara, Kyoto, Japan, assignor to Kanebo Ltd., Tokyo, Japan

Filed May 19, 1972, Ser. No. 254,868

Claims priority, application Japan, May 24, 1971, 46/35,350; Oct. 25, 1971, 46/84,569

Int. Cl. C02c *5/02*

U.S. Cl. 210—30 **14 Claims**



A liquid containing diluted anionic dyes or disperse dyes is cleaned by specific polyamide fibers having a high diluted dye absorption coefficient for the dye of at least 0.5 and at least 150 meq./kg. of amino group, which are contained in an absorption column through which the liquid is circulated, and the cleaned liquid is returned into the dyeing system for the next process.

3,829,381

BORON- AND CALCIUM-CONTAINING COMPOSITIONS AND PROCESS

William Monroe Le Suer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,005

Int. Cl. C10m *1/40*

U.S. Cl. 252—33.4 **1 Claim**

Boron- and calcium-containing compositions useful as lubricant and fuel additives are prepared by reacting boric acid with certain carbonated, calcium overbased petrosulfonates.

3,829,382

DOPING CONTROL FOR SEMICONDUCTOR MATERIALS

William F. Tucker, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of abandoned application Ser. No. 68,827, Sept. 2, 1970. This application May 15, 1972, Ser. No. 253,399

Int. Cl. H01l *7/42, 7/44*

U.S. Cl. 252—62.3 R **4 Claims**

The impurity concentration of a semiconductor material being processed, such as by zone refining, is precision controlled by flowing a dopant gas to a time-controlled proportioning device which feeds a preselected fraction of the dopant to the semiconductor material. The dopant gas flows at a constant flow rate and constant pressure to the proportioning device thereby eliminating memory or storage effects in the doping system and improving the doping control of the processed material.

3,829,383

DETERGENT BUILDER AND SEQUESTERING AGENT

Gene C. Robinson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of application Ser. No. 262,547, June 14, 1972, which is a continuation-in-part of application Ser. No. 232,638, Mar. 7, 1972, both now abandoned. This application Dec. 11, 1972, Ser. No. 313,863

Int. Cl. C11d *3/20*

U.S. Cl. 252—89 **17 Claims**

To obviate eutrophication of lakes, streams, etc., nonphosphorus highly biodegradable builders and sequestrants are provided for household and industrial use. These builders and sequestrants are either (1) a *cis*-2,5-disubstituted tetrahydrofuran in which the substituents are carboxy or carboxymethyl groups, (2) water soluble salts of such tetrahydrofurans, or (3) mixtures of (1) and (2). Conventional detergent actives may also be utilized in combination with the builders or sequestrants of this invention.

3,829,384

DETERGENT FORMULATIONS

Marvin M. Crutchfield, Creve Coeur, and Russel D. Harken, Maryland Heights, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 11, 1972, Ser. No. 313,732

Int. Cl. C11d *1/04*

U.S. Cl. 252—89 **3 Claims**

Detergent formulations comprising tetra alkali metal ethane tetracarboxylate as a detergency builder in combination with conventional surfactants provide effective cleaning action and are readily biodegradable.

3,829,385

DETERGENT COMPOSITIONS CONTAINING N-CHLORO-IMIDES

Charles Theodoric Abbott, Jr., and George Cunningham Smith, Jr., Montgomery, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Aug. 17, 1972, Ser. No. 281,614

Int. Cl. C11d *7/54*

U.S. Cl. 252—95 **13 Claims**

Deteregnt compositions containing a water-soluble organic detergent; an N-halo-imide; and an amount effective to stabilize said N-halo-imide of anhydrous sodium acetate. The detergent compositions exhibit desirable cleaning, oxidizing and bleaching properties and are stabilized against loss of available halogen.

3,829,386

SURFACTANT-FOAM DEPRESSANT EMULSION COMPOSITIONS

Walter F. Wegst, Grosse Ile, and Otto T. Aepli, Southgate, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation of abandoned application Ser. No. 866,715, Oct. 15, 1969. This application Oct. 16, 1972, Ser. No. 297,803

Int. Cl. C11d *3/06, 3/16*

U.S. Cl. 252—135 **4 Claims**

Emulsions of silicone-based foam depressants dispersed in low cloud point liquid nonionic surfactants are incorporated into alkaline detergent compositions to provide improved detergent compositions which obviate the need for the addition of supplemental foam depressants during continuous wash operations. The emulsions of the present invention generally comprise from about 10 to 50 percent by weight of depressant and from about 50 to 90 percent by weight of surfactant. They are stable over a wide temperature and concentration range and can easily be incorporated into solid alkaline dishwashing and detergent compositions in effective concentration of from 1 to 5 percent by weight of the total compositions. The compositions employing the emulsion are useful in both industrial and domestic wash operations.

3,829,387

CAUSTIC CLEANER COMPOSITION

Louis M. Wise, Berkeley Heights, and Edmund J. Bozek, Jr., Plainfield, N.J., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 22, 1972, Ser. No. 265,404

Int. Cl. C11d *7/06, 7/12*

U.S. Cl. 252—156 **11 Claims**

A caustic containing cleaner composition is described which comprises an alkali, a non-ionic surfactant, water and from about 3 to about 20% by weight of a solvent comprising a mixture of two different phenyl glycol ethers of ethylene glycol, diethylene glycol or triethylene glycol. The composition, which may optionally include a secondary or tertiary aliphatic amine and one or more other organic solvents, is useful for removing grease and other deposits from soiled surfaces such as oven walls.

3,829,388

BENEFICIATION OF LIGNIN SOLUTIONS AND PULP MILL WASTES

K. Robert Lange, Huntingdon Valley, Arthur M. Stern, Morrisville, and Lawrence L. Gasner and Yuan Tsun Hsu, Cornwells Heights, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Aug. 1, 1972, Ser. No. 277,006

Int. Cl. C02b *1/20, 5/06*

U.S. Cl. 252—180 **6 Claims**

The present disclosure is directed primarily to a method of producing valuable products from aqueous solutions of lignin and lignin derivatives. Aqueous solutions of the lignin and derivatives thereof are available as commercial solutions, can be made from solids or semi-solid mixtures thereof or are available as waste effluents from pulp producing mills.

With respect to the latter source, the inventive method not only permits the obtention of valuable products therefrom, but also reduces the amount of nonbiodegradable and toxic materials normally contained therein to be eliminated prior to discharge. In addition, the method reduces the color of the final discharge. Basically, the method entails the addition to the lignin or lignin derivative solution of a polyvalent metal salt, the cation of which will react with a portion of the lignin solution to produce

a water-insoluble precipitate, acidification of the precipitate and final treatment with a basic solution. The final products possess utilities as scale and precipitate agents for aqueous systems, namely steam producing and cooling water systems.

3,829,389

PROCESS FOR PREPARING CALCIUM NITRATE AND PHOSPHORIC ACID SOLUTIONS FREE FROM SOLID PARTICLES IN SUSPENSION

Giacinto Veronica and Antonio Fidani, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed July 12, 1972, Ser. No. 271,132
Claims priority, application Italy, Mar. 6, 1972, 21,460/72
Int. Cl. C01b *25/16;* C01f *1/00*
U.S. Cl. 252—182 **12 Claims**

A process is disclosed for preparing solutions consisting mainly of calcium nitrate and phosphoric acid substantially free from solid particles in suspension. The process involves attacking phosphate rock with nitric acid to obtain a slurry which contains mainly calcium nitrate and phosphoric acid and in which the silica derived from the dissolution of silicates is present in a quantity of 12 to 27 grams per kg. of attacked phosphate rock; treating the slurry with a flocculating agent of a known type in a quantity of 10–150 mg. per kg. of phosphate rock, thus forming an upper layer consisting essentially of the thickened solids and a lower layer consisting essentially of the solution subtsantially free from solid particles in suspension; and then separating the clarified solution from the thickened solids.

3,829,390

ALUMINUM HYDRIDE PRODUCT

Eugene C. Ashby, William D. Taylor, and Donald A. Winkler, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Mar. 29, 1963, Ser. No. 269,851
Int. Cl. C01b *6/00;* C06d *5/00*
U.S. Cl. 252—188 **5 Claims**

1. A stable, essentially chloride and lithium free solution of aluminum hydride in a molar concentration of 0.1 to 0.8 in a lower alkyl dialkyl ether, said solution being precipitate free after a period of at least 24 hours at a temperature of about 20° C.

3,829,391

SUBMERGED ARC CRYSTAL GROWTH PROCESS FOR GROWING TRANSPARENT ALKALINE EARTH OXIDE SINGLE CRYSTALS

Yok Chen and Marvin M. Abraham, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Sept. 19, 1972, Ser. No. 290,296
Int. Cl. C01f *11/06*
U.S. Cl. 252—301.4 R **10 Claims**

An improved method for growing transparent single crystals of alkaline earth oxides by the submerged arc method wherein after fusion of a charge the power supplied to the arc is reduced to 20 to 40 percent of the original value and maintained at the reduced value for the duration of the run.

3,829,392

HETEROGENEOUS CATALYSTS FOR OLEFIN EPOXIDATION

Harald P. Wulff, Alameda, Calif., assignor to Shell Oil Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 77,385, Oct. 1, 1970. This application Mar. 13, 1972, Ser. No. 234,301
Int. Cl. B01j *11/06*
U.S. Cl. 252—430 **24 Claims**

Solid chemical combinations of certain metal oxides or hydroxides with oxygen compounds of silicon give improved performance as catalysts for the epoxidation of olefinically unsaturated compounds with organic hydroperoxides when the catalysts are first treated with an organic silylating agent at elevated temperature.

3,829,393

COBALT OXIDE CATALYST

Derek James Sutherland Burleigh and Brian Desmond Hawkins, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 5, 1973, Ser. No. 337,848
Claims priority, application Great Britain, Mar. 23, 1972, 13,603/72
Int. Cl. B01j *11/22*
U.S. Cl. 252—459 **3 Claims**

The sintering of cobalt oxide catalysts is facilitated by the use as sintering aid of from 1 to 10% by weight of a carboxylic acid selected from fumaric acid and compounds of the formula $R \cdot CO_2H$ where R is phenyl, p-methoxyphenyl, p-tolyl, o-hydroxyphenyl or diphenylmethyl, sintering being effected at a temperature above 500° C.

3,829,394

FLAME RETARDANT COMPOSITION

Maria Feiner, Henin Lietard, Michel Gubler, Paris, and Joseph Guillon, Meurchin, France, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Sept. 10, 1970, Ser. No. 71,238, now Patent No. 3,677,942. Divided and this application Mar. 1, 1972, Ser. No. 231,039
Claims priority, application France, Sept. 12, 1969, 6931182
Int. Cl. C09k *3/28*
U.S. Cl. 260—4 AR **10 Claims**

Self-extinguishing plastic materials are prepared by incorporating in the plastic a composition of an organic bromine compound, an organic phosphate and a lead salt.

3,829,395

CORROSION RESISTANT PRIMER COMPOSITION CONTAINING ZINC BORATE PIGMENT

Gerald W. Goodell, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 28, 1972, Ser. No. 267,074
Int. Cl. C09d *3/48, 5/08, 5/12*
U.S. Cl. 260—22 A **7 Claims**

The corrosion resistant primer composition is a non-polluting primer that utilizes zinc borate as a corrosion inhibitive pigment and as a film-forming binder an alkyd resin, an epoxy resin, an epoxy ester resin, an acrylic resin, a polyurethane, an oleoresinous product or a phenolic product is utilized; the primer is particularly useful for automobiles, trucks and appliances which require a high degree of corrosion protection.

3,829,396

VINYL CHLORIDE RESINS STABILIZED WITH METAL COMPOUND-EPOXY COMPOUND-PHOSPHITE COMBINATIONS

Vincent Oakes, St. Helens, and David F. W. Cross, Liverpool, England, assignors to Interstab Limited, Liverpool, Lancashire, England

No Drawing. Original application Sept. 6, 1967, Ser. No. 665,725, now Patent No. 3,697,463. Divided and this application June 20, 1972, Ser. No. 264,481
Claims priority, application Great Britain, Sept. 8, 1966, 40,114/66, 40,115/66, 40,116/66
Int. Cl. C08f *45/58, 45/60, 45/62*
U.S. Cl. 260—23 XA **2 Claims**

Halogen containing resins, e.g., vinyl chloride resins, and diolefin polymers, e.g., butadiene-styrene rubber and acrylonitrile-butadiene-styrene terpolymer are stabilized, e.g., against heat by mixed phosphites having one aryl group having an ortho or para directing ring activating substituent and two alkyl or alicyclic groups. The pre-

ferred alkyl or alicyclic group is cyclohexyl. Some of the compounds, particularly those having cyclohexyl groups, are novel per se as are compounds in which the aryl group has an amino, amido, acetyl or acyloxy substituent.

3,829,397

ACRYLIC COATING COMPOSITION FOR REFINISHING FLEXIBLE SUBSTRATES

Ronald J. Sheppard, Flushing, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 30, 1972, Ser. No. 285,094

Int. Cl. C08f *15/18, 37/06, 45/40*

U.S. Cl. 260—31.8 M **3 Claims**

The coating composition is useful for repairing the finish of flexible automobile and truck bumpers and comprises a blend of the following polymers:

(1) a copolymer of methyl methacrylate and an alkyl acrylate or an alkyl methacrylate having 2–12 carbon atoms in the alkyl groups;

(2) a copolymer of methyl methacrylate and an adhesion of promoting monomer such as the 3-2-methacryloxyethyl (-2,2 spiro cyclohexyl oxazolidine);

(3) a plasticizer which is either a phthalate ester such as butyl benzyl phthalate or butyl cyclohexyl phthalate or an alkyd resin;

the novel composition can be blended with other pigmented acrylic polymer coating compositions to form a high quality refinish composition for flexible bumpers.

3,829,398

PLASTICIZED VINYL CHLORIDE POLYMER COMPOSITION FOR TRANSPARENT PACKING FILM

Yoshikatsu Ogawa, Keiji Katada, Mitsuhiro Nakano, and Kozi Yasumatsu, Osaka, Japan, assignors to Marubishi Yuka Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Continuation of abandoned application Ser. No. 157,603, June 28, 1971. This application June 6, 1973, Ser. No. 367,570

Claims priority, application Japan, Oct. 12, 1970, 45/88,775

Int. Cl. C08f *45/40*

U.S. Cl. 260—31.8 R **4 Claims**

Transparent plasticized vinyl chloride polymer film for packing perishable foodstuffs is improved in its resistance against clouding that is, frosting which occurs due to the condensation of moisture evaporated from perishable foodstuffs packed with the film, by incorporating thereinto a small amount of a mixture of ethylene oxide-added sorbitan higher fatty acid ester and ethylene oxide-added glycerin higher fatty acid ester.

3,829,399

NOVEL POLYAMIDEIMIDE PRECURSORS AND HARDENABLE COMPOSITIONS CONTAINING THE SAME

Shigeyoshi Hara, Takeyoshi Yamada, and Tsunemasa Yoshida, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

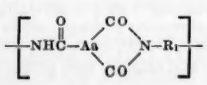
No Drawing. Filed Aug. 8, 1972, Ser. No. 278,803

Claims priority, application Japan, Aug. 12, 1971, 46/61,288; Sept. 20, 1971, 46/73,205, 46/73,206; Sept. 28, 1971, 46/75,604; Sept. 29, 1971, 46/76,191; Jan. 28, 1972, 47/10,311

Int. Cl. C08g *51/28, 51/34*

U.S. Cl. 260—32.6 NT **21 Claims**

An organic solvent-soluble polyamideimide precursor in which at least 50 mole percent of the total structural units are structural units having as the main chain an aromatic amideimide group expressed by the following formula (1)



(1)

wherein Ar stands for an aromatic group, and R_1 is an organic radical having a valency of at least two,

and at least 30 mole percent of the total terminal groups are carboxylic acid aryl ester groups. This precursor can give a hardened high polymer excellent in heat resistance when it is heated alone or together with a polyfunctional compound containing at least two reactive groups selected from hydroxyl (—OH) groups and primary and secondary amino group.

3,829,400

FLAME RETARDANT POLYAMIDE FIBER COMPOSITION USING OXY-TIN COMPOUNDS AND PROCESS FOR THE PREPARATION THEREOF

Tetsuya Kato, Nagoya, and Tutomu Ohira, Ogaki, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed May 26, 1972, Ser. No. 257,425

Claims priority, application Japan, May 28, 1971, 46/36,303; July 16, 1971, 46/52,447

Int. Cl. C08g *51/04, 51/56*

U.S. Cl. 260—37 N **16 Claims**

The present invention describes a flame retardant polyamide fiber and a process for production thereof which includes the concurrent use of an oxy-tin compound and a halogen as flame retardant agents. The halogen may be a halogen contained in either a divalent metal halide or an organic halogen compound.

Furthermore, when a zinc compound, for example, zinc oxide or zinc hydroxide is added to the polyamide in addition to the oxy-tin compound and halogen, the flame retardant effect increases substantially.

3,829,401

HEAT SENSITIVE RECORDING PAPER

Kiyoshi Futaki, Kozo Haino, and Isao Kohmura, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

No Drawing. Filed Oct. 25, 1972, Ser. No. 300,873

Claims priority, application Japan, Oct. 30, 1971, 46/86,341

Int. Cl. B41n *5/22*

U.S. Cl. 260—38 **8 Claims**

In the heat sensitive recording system comprising combination of a color forming compound and a phenol compound, the fading of the heat recording composition in the dark can be prevented by allowing a phenol resin to be present in the heat sensitive layer or in contact with the layer. Said phenol resin is the one obtained by condensation of at least one of lower aliphatic aldehydes, lower aliphatic aldehyde producing agent and lower alkylvinyl ethers and a phenol compound having 3 or more ortho-and/or para-positions (to phenolic hydroxyl group) having no substituents.

3,829,402

PROCESS FOR THE PREPARATION OF COMPOSITIONS COMPRISING POLYVINYL ALCOHOL AND A FINELY DISPERSED SOLID

Johann Wolfgang Zimmermann, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 5, 1973, Ser. No. 321,216

Claims priority, application Germany, Jan. 5, 1972, P 22 00 321.0

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.13 **4 Claims**

A process for the preparation of compositions of polyvinyl alcohol and finely dispersed solids is provided by subjecting a polyvinyl ester to hydrolysis or alcoholysis in the presence of a finely dispersed solid and an acid or alkaline catalyst, removing the solvents and drying the resulting composition.

3,829,403
LIGHTWEIGHT CERAMIC LENS FOR MICROWAVE ANTENNA

William E. Lent, Los Angeles, and José A. Flores, Venice, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed July 2, 1970, Ser. No. 51,875
Int. Cl. C04b *21/06, 35/64*
U.S. Cl. 264—44 **1 Claim**

A process for making a lens, generally in the shape of a sphere, composed of a dielectric material having a dielectric constant which may have a value anywhere between 2 and 20, for the specific gravity range of 0.70 to 2.50, suitable for use at a temperature of up to 1200° C., with certain compositions and at frequencies up to microwave frequencies of 100 gHz, comprising the steps of:

(1) preparing a porous, lightweight, ceramic grain;
(2) blending the grain with a mixture of organic and ceramic binders;
(3) forming the material into a desired shape, followed by burning out the organic binders. The forming may take one of two forms:
  (a) hydrostatic pressing in a rubber mold; or
  (b) sintering in a refractory mold, also designated kiln bonding;
(4) dry machining the lens to precise spherical dimensions; and
(5) coating the machined lens with a ceramic or ceramic-plastic sealing system.

3,829,404
STABILIZATION OF SYNTHETIC POLYMERS WITH CERTAIN PIPERIDINO-THIAZOLINE COMPOUNDS

Keisuke Murayama, Syoji Morimura, Hideo Horiuchi, Katsuaki Matsui, Tomoyuki Kurumada, and Noriyuki Ohta, Tokyo, Japan, assignors to Sankyo Company Limited

No Drawing. Filed Oct. 20, 1972, Ser. No. 299,340
Claims priority, application Japan, Oct. 29, 1971, 46/86,071
Int. Cl. C08f *45/60;* **C08g** *51/60*
U.S. Cl. 260—45.8 SN **8 Claims**

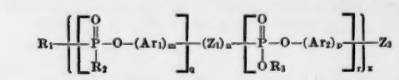
Synthetic polymer compositions, particularly polyurethane compositions, stabilized against their deteriorations which contain at least one of 6-substituted or unsubstituted-5,5,7,7-tetramethylpiperidino-[5.4 - c]-Δ^3-thiazoline-2-spiro-4'-(1'-substituted or unsubstituted-2',2',6',6'-tetramethylpiperidine) compounds. Such piperidino-thiazoline compounds are prepared by reacting the corresponding 2,2,6,6-tetramethyl-piperidine-4-one with elementary sulfur under the stream of gaseous NH_3 or by reacting 5,5,7,7-tetramethylpiperidino-[5.4-c] - Δ^3 - thiazoline-2-spiro-4'-(2',2',6',6'-tetramethylpiperidine) with the corresponding halide.

3,829,405
PHOSPHORUS-CONTAINING POLYESTERS

Stuart Lyle Cohen, Charlotte, N.C., and Robert William Stackman, Morristown, N.J.; said Cohen assignor to Fiber Industries, Inc., and said Stackman assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 51,019, June 29, 1970. This application June 22, 1971, Ser. No. 155,608
The portion of the term of the patent subsequent to Aug. 20, 1991, has been disclaimed
Int. Cl. C09k *3/28;* **D04h** *11/00*
U.S. Cl. 260—45.95 D **7 Claims**

Phosphorus-containing polyester compositions and shaped articles made therefrom having improved flame retardant properties wherein said polyester compositions comprise melt blends of a synthetic linear polyester with up to about 25 percent, based on the weight of polyester, of a polymer which is a poly(phosphonate-phosphate) copolymer having the following average general formula:



wherein R_1 is a monovalent radical having up to about 20 carbon atoms selected from the group consisting of alkoxy, aryloxy, hydroxy, haloalkoxy, haloaryloxy, hydroxyalkoxy, and hydroxy-aryloxy; R_2 is a monovalent radical having up to 20 carbon atoms selected from the group consisting of hydrogen, alkyl, aryl, haloalkyl, and haloaryl; R_2 is a monovalent radical having up to 20 carbon atoms selected from the group consisting of alkyl, aryl, haloalkyl and haloaryl; Ar_1 and Ar_2 are divalent radicals each having up to about 20 carbon atoms independently selected from the group consisting of arylene and haloarylene; Z_1 is a divalent radical selected from the group consisting of alkylene, arylene, haloalkylene, haloarylene, oxy, thio, and sulfonyl; Z_2 is either hydrogen or

m, *n*, and *p* are integers which independently are either 0 or 1 and at least one of *m* and *p* is 1; *q* and *r* are integers of at least 1; *x* is greater than 1. The most preferred polymer is the copolymer poly[(*m*-phenylene phenylphosphonate)$_q$(*m*-phenylene phenylphosphate)$_r$] where *q*/*r* is greater than 3.

3,829,406
FABRICABLE INFUSIBLE PARA-OXYBENZOYL POLYESTER PRODUCTION

Steve G. Cottis, Amherst, James Economy, Eggertsville, and Bernard E. Nowak, Lancaster, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,623
Int. Cl. C08g *17/02*
U.S. Cl. 260—47 C **10 Claims**

Polyesters are produced which consist essentially of recurrying p-oxybenzoyl structural units and which are infusible and very thermally stable, but which are fabricable by virtue of a reversible crystalline transition which occurs in the temperature range from about 330° C. to about 360° C. Such polyesters are produced by heating p-acetoxybenzoic acid in an inert, high boiling liquid heat transfer medium to a temperature above 300° C. but below about 425° C., and maintaining the temperature in the specified range until sufficient condensation has occurred to produce the desired polyester. In addition to being infusible, thermally stable and fabricable, the polyesters are characterized by excellent chemical, mechanical, electrical and thermal properties.

3,829,407
POLY-N, N-ETHYLENE UREAS AND THERMOSET RESINOUS COMPOSITIONS DERIVED THEREFROM

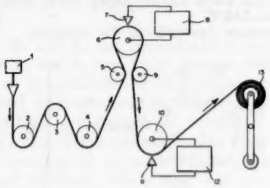
William J. McKillip and Billy M. Culbertson, Worthington, Ohio, assignors to Ashland Oil Inc., Ashland, Ky.

No Drawing. Continuation-in-part of abandoned application Ser. No. 865,493, Oct. 10, 1969. This application Feb. 22, 1973, Ser. No. 334,634
Int. Cl. C08g *22/06*
U.S. Cl. 260—77.5 R **5 Claims**

Linear addition polymers having pendant N,N-ethylene ureido functionality and the thermoset products derived therefrom by reaction with a crosslinking agent containing a plurality of reactive hydrogen atoms or through condensation of the N,N-ethylene ureido groups in the presence of a Lewis acid catalyst; such products having general

utility in surface coating, molding and adhesive applications.

3,829,408
THERMOPLASTIC POLYMERIC SHEET CONTAINING ANTISTAT COMPOUND
Richard I. Wolkowicz, Clarksboro, N.J., assignor to Scott Paper Company, Delaware County, Pa.
Original application Mar. 23, 1970, Ser. No. 21,954, now Patent No. 3,703,569. Divided and this application Sept. 21, 1972, Ser. No. 290,966
Int. Cl. C08f *29/04, 37/00, 45/00*
U.S. Cl. 260—88.25 **1 Claim**



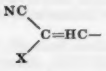
Thermoplastic polymeric sheet material which has been subjected to corona treatment and which contains an antistatic agent, the amount of antistat being at least the amount which gives an adequate static decay rate to the sheet after being modified by corona treatment but less than the amount sufficient to produce a measurable increase in the static decay rate of the sheet in the absence of corona treatment.

3,829,409
BLOCK HOMOPOLYMERS OF 1,3-BUTADIENE AND PROCESS FOR PREPARING THEM
Neidhart Sommer and Karl-Heinz Nordsiek, Marl, Germany, assignors to Chemische Werke Huls, A.G., Marl, Germany
No Drawing. Filed Nov. 27, 1972, Ser. No. 309,817
Claims priority, application Germany, Nov. 26, 1972, P 21 58 575.1
Int. Cl. C08d *1/20, 3/06*
U.S. Cl. 260—94.2 M **12 Claims**

Block homopolymers of 1,3-butadiene having a first block with nonuniform vinyl group distribution and a further block having a uniform vinyl group distribution in a mole ratio of 20:80 to 95:5 respectively and an average vinyl group content of 15–75%, preferably 20–50%, are prepared by adiabatic solvent polymerization at an ascending temperature in the presence of a catalyst system comprising an organolithium compound and a Lewis base. The polymers have improved processing properties.

3,829,410
5-(CYANOVINYLENE)-2-THIAZOLYLAZO-ANILINE COMPOUNDS
John G. Fisher, Max A. Weaver, and Clarence A. Coates, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 21,179, Mar. 19, 1970. This application Sept. 11, 1970, Ser. No. 71,365
Int. Cl. C09b *29/08;* **D06p** *3/26, 3/54*
U.S. Cl. 260—158 **10 Claims**

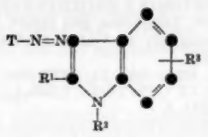
Azo compounds useful as dyes for polyester textile materials have an aniline or a 1,2,3,4-tetrahydroquinoline coupling component and a 2-thiazolyl diazo component which, at the 5-position is substituted with a group having the formula



in which X is a substituent such as cyano, alkoxycarbonyl, alkylsulfonyl, or carbamoyl. The azo compounds produce blue shades on polyester fibers and exhibit improved fastness to light and sublimation.

3,829,411
THIADIAZOLYL-AZO-INDOLE COMPOUNDS
Clarence A. Coates, Jr., and Max A. Weaver, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Mar. 29, 1972, Ser. No. 239,338
Int. Cl. C09b *29/36;* **D06p** *3/24, 3/52*
U.S. Cl. 260—158 **10 Claims**

Azo compounds having the general formula



in which T is a disperse dye 1,3,4-thiadiazol-2-yl or 1,3,5-thiadiazol-2-yl diazo component; R^1 is aryl; R^2 is hydrogen, alkyl, cyanoalkyl, unsubstituted or substituted carbamoylalkyl or acylamidoalkyl; and R^3 is hydrogen, alkyl, alkoxy or halogen. The compounds are useful for dyeing cellulose acetate, polyester and, especially, polyamide fibers on which the compounds produce yellow to orange shades and exhibit good dyeability and fastness to light and washing.

3,829,412
CHEMICALLY MODIFIED POLYSACCHARIDES AND PROCESS OF PREPARING SAME
Frederick L. G. Kunz, Manitowoc, Wis., assignor to Frederick Lunz and Company, Limited, Manitowoc, Wis.
No Drawing. Filed May 15, 1970, Ser. No. 37,919
Claims priority, application Germany, May 16, 1969, P 19 24 900.4
Int. Cl. C07c *47/18;* **C07g** *3/00*
U.S. Cl. 260—209 R **11 Claims**

Polysaccharides chemically reacted in solution with a bifunctional etherifying compounds, such as epichlorohydrin and glycerol dihalohydrin, to effect cross-linking and providing a modified polysaccharide which forms aqueous solutions having a predetermined increased viscosity comparable to solutions of commercially available gums, and said modified polysaccharides preferably being stabilized against further cross-linking by reacting with a hydroxy compound having a primary hydroxyl group, such as pentaerythritol, ethylene glycol and sorbitol; and the process of preparing and stabilizing modified polysaccharides in an aqueous solution.

3,829,413
OZONOLYSIS OF ACETALS
Pierre Deslongchamps, Sherbrooke, Quebec, Canada, assignor to Universite de Sherbrooke, Sherbrooke, Quebec, Canada
No Drawing. Filed July 2, 1971, Ser. No. 159,475
Int. Cl. C07c *47/18, 69/32*
U.S. Cl. 260—210 R **13 Claims**

There is provided a process for converting cyclic and acyclic acetals to esters by ozonolysis.

3,829,414
2-(2-INDOLYL)INDOLINES

Yao Hua Wu and Arthur Jacob Mueller, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Application Jan. 19, 1970, Ser. No. 4,108, now Patent No. 3,697,553, dated Oct. 10, 1972, which is a continuation-in-part of abandoned application Ser. No. 709,941, Mar. 4, 1968. Divided and this application May 8, 1972, Ser. No. 251,059

Int. Cl. C07d *27/38*

U.S. Cl. 260—239 B **14 Claims**

2-(2- or 3-Indolyl)indolines, unsubstituted and carbon substituted, condense with N-mono substituted carboxamides or with lactams under the influence of phosphorus oxychlorides to produce 1-(N-substituted iminoalkyl)-2-(2- or 3-indolyl)indolines. The 2-(3-indolyl)-1-[2-(1-pyrrolinyl)]indolines rearrange to produce benzodiazepine derivatives. These products have diuretic activity on oral administration.

3,829,415
PREPARATION OF SUBSTITUTED HYDROXY PROPIONATES

Priscilla D. Byrd, Tarrytown, and Henry E. Fritz, Ossining, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 11, 1973, Ser. No. 350,161

Int. Cl. C07c *59/00;* **C08b** *11/00*

U.S. Cl. 260—231 A **10 Claims**

Substituted beta-hydroxy propionates have been prepared by the interaction of alkali metal acrylates and hydrocarbons containing at least one primary alcohol group.

3,829,416
CORROSION PREVENTIVE METAL BOND/WELDBOND ADHESIVE

Dallas Fields, Smyrna and Maxwell L. Shatzen, Jr., Atlanta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

No Drawing. Filed Feb. 9, 1973, Ser. No. 331,014

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP **2 Claims**

Environmental corrosion-resistance properties of conventional thermal curing paste adhesives for metallic structures are substantially increased by admixture of adhesive with magnesium chromate ($MgCrO_4$) and barium chromate ($BaCrO_4$).

3,829,417
IMIDAZOLE SUBSTITUTED RIFAMYCINS

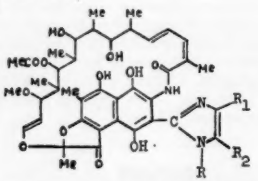
Nicola Maggi, Milan, and Renato Cricchio, Varese, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,657

Int. Cl. C07d *99/02, 99/04*

U.S. Cl. 260—239.3 P **13 Claims**

Disclosed are 3-substituted rifamycins of Formula I and their 25-desacetyl and 16,17; 18,19; and 28,29 hexahydro derivatives



(I)

wherein R represents hydrogen, lower alkyl, phenyl and phenyl-lower alkyl, R_1 and R_2 together represent a carbocyclic chain forming with the double bond of the adjacent imidazole moiety a benzene ring, a mono or poly-substituted benzene ring wherein the substituents are independently selected from lower alkyl, lower alkoxy, halo, carboxy, carbalkoxy, sulfo, sulfamoyl, nitro, trifluoromethyl, carbamyl, mono and di-lower alkyl-carbamyl and methylenedioxy, or a substituted or unsubstituted fused polynuclear aromatic group including 2–3 condensed rings each of 5–6 carbon atoms.

The compounds of the invention are useful as antibacterial agents.

3,829,418
BASIC BENZIMIDAZOLINE ARYLHYDRAZONE DYESTUFFS

Roderich Raue, Leverkusen, and Hans-Lothar Dorsch, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

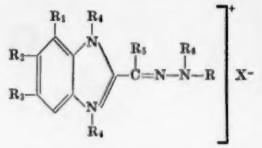
No Drawing. Filed Mar. 16, 1971, Ser. No. 124,975

Claims priority, application Germany, Mar. 23, 1970, P 20 13 791.1

Int. Cl. C09b *23/16;* **D06p** *3/34, 3/70*

U.S. Cl. 260—240 G **12 Claims**

Basic hydrazone dyestuffs of the formula



wherein R is an aromatic-carbocyclic radical, R_1 is hydrogen or alkyl, R_2 is hydrogen, alkyl, alkoxy, or an amino which may be substituted by alkyl, sulphonyl, or carbamoyl, R_3 is hydrogen, alkyl, or alkoxy, R_4 is alkyl, R_5 is nitrile, or carbonamido, R_6 is hydrogen, alkyl, aralkyl, or cycloalkyl, X^- is an anion, and wherein the aliphatic, cycloaliphatic, or aromatic radicals R, R_1, R_2, R_3, R_4, R_5, or R_6 may be further substituted by non-ionic substituents having a Hammett constant σ para less than 0.7. These dyestuffs are useful in dyeing or printing leather, cotton, cellulose acetate, and lignin-containing fibers.

3,829,419
TETRAHYDRO-4H-1,3,5-OXADIAZIN-4-ONE

William David Weir, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Mar. 26, 1973, Ser. No. 344,802

Int. Cl. C07d *87/52*

U.S. Cl. 260—244 **1 Claim**

The novel compound tetrahydro-3-(4-nitrophenyl)-5-(3-pyridylmethyl)-4H-1,3,5-oxadiazin-4-one. It is useful as a rodenticide.

3,829,420
3,4-DIHYDRO-2(1H)-QUINAZOLINONES AND PREPARATION THEREOF

Shigeho Inaba, Takarazuka, Michihiro Yamamoto, Toyonaka, Kikuo Ishizumi, Ikeda, Kazuo Mori, Kobe, Masao Koshiba, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

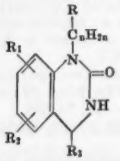
No Drawing. Filed July 8, 1971, Ser. No. 160,947

Claims priority, application Japan, July 13, 1970, 45/61,618; Nov. 5, 1970, 45/98,107; Dec. 23, 1970, 45/118,332

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 QB **7 Claims**

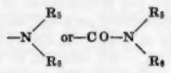
Quinazoline derivatives represented by the formula,



wherein R_1 and R_2 are individually a hydrogen, a lower alkyl, a lower alkoxy, a nitro, a trifluoromethyl, a lower

alkylthio, a lower alkylsulfonyl or a halogen; R_3 is a group of the formula

(wherein R_4 is a hydrogen, a lower alkyl, a lower alkoxy, a trifluoromethyl or a halogen), a naphthyl, a lower cycloalkyl, a lower cycloalkenyl, a pyridyl, a pyrrolyl, a thienyl or a furyl; R is a lower cycloalkyl, a trihalomethyl, a lower alkoxy, a lower alkylthio, a lower alkanoyloxy or a group of the formula



(wherein R_5 and R_6 are individually a lower alkyl provided that R_5 and R_6 may form together with the adjacent nitrogen an unsubstituted or optionally substituted 5- or 6-membered heterocyclic ring, which may further contain a nitrogen, an oxygen or a sulfur); and *n* is an integer of 1 to 3. These quinazoline derivatives have excellent pharmacological properties particularly anti-inflammatory and analgesic effects with low toxicity.

3,829,421
3-ARYL-BENZAZINES

Klaus Irmscher, Josef Kramer, Gerhard Cimbollek, Dieter Orth, Herbert Nowak, and Karl-Otto Freisberg, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, West Germany

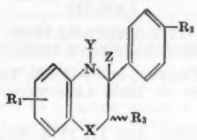
No Drawing. Original application Nov. 13, 1969, Ser. No. 876,611, now Patent No. 3,711,478. Divided and this application Oct. 19, 1972, Ser. No. 298,875

Claims priority, application Germany, Nov. 18, 1968, P 18 09 454.7; Nov. 23, 1968, P 18, 10 561.8

Int. Cl. C07d *87/48*

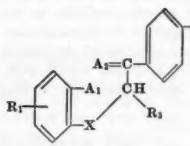
U.S. Cl. 260—244 R **9 Claims**

3-Aryl-Benzazines having serum cholesterol lowering activity of the formula

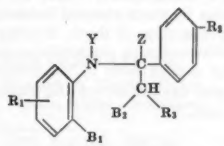


I

wherein R_1 and R_2 are H, OH, esterified OH, alkyl, alkoxy or benzyloxy, R_3 is alkyl, X is O or S, Y is H or acyl and Z is H or Y and Z collectively are a C—N bond are prepared by cyclizing of the following classes of compounds:



II



III

wherein A_1 is NH_2 or Halogen, A_2 is =O, =S, =NH, (H, NH_2) or (H, Halogen), at least one being a nitrogen function, and B_1 and B_2 are OH, SH or reactive functional derivatives thereof, or (one of B_1 and B_2 only) H or Halogen; or by reducing or dehydrating compounds of Formula I and compounds otherwise corresponding to Formula I wherein Z is OH; or by hydrolyzing or hydrogenating compounds otherwise corresponding to Formula I wherein R_1 and/or R_2 is a functionally modified OH group convertible to an OH group by hydrolysis of hydrogenolysis.

3,829,422
1,4-SUBSTITUTED-PYRIMIDIN-2(1H)-ONES

Goetz E. Hardtmann, Florham Park, N.J., and Hans Ott, Klusweg, Basel-Land, Switzerland, assignors to Sandoz-Wander Inc.

No Drawing. Original application Nov. 26, 1968, Ser. No. 779,200, now Patent No. 3,663,698. Divided and this application Jan. 27, 1972, Ser. No. 221,380

Int. Cl. C07d *51/38*

U.S. Cl. 260—251 R **10 Claims**

Compounds of the class of 1-substituted-4-aryl-pyrimidin-2(1H)-ones, methods and intermediates for preparation of said compounds, and pharmaceutical methods and compositions based on said compounds and useful in therapy, for example, in the treatment of inflammation in animals.

3,829,423
6-SUBSTITUTED 1-PHENAZINOL 5,10-DIOXIDE DERIVATIVES

Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Apr. 2, 1970, Ser. No. 25,298, now Patent No. 3,681,331, dated Aug. 1, 1972. Divided and this application May 1, 1972, Ser. No. 248,907

Int. Cl. C07d *51/80*

U.S. Cl. 260—267 **4 Claims**

6-Substituted derivatives of 1-phenazinol 5,10-dioxide which possess broad spectrum anti-microbial activity are disclosed.

3,829,424
SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside, Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Continuation-in-part of application Ser. No. 271,459, July 13, 1972, which is a continuation-in-part of abandoned application Ser. No. 464, Jan. 2, 1970. This application May 17, 1973, Ser. No. 361,110

Int. Cl. A01n *9/02, 9/20, 9/22*

U.S. Cl. 424—263 **8 Claims**

The present invention relates to certain processes and compositions useful for inhibiting the growth of slime in water and, in particular, water used for industrial purposes; for example, in the manufacture of pulp paper, in the manufacture of paper, in cooling water systems and in effluent water treatment. The novel processes and compositions of the present invention are processes or mixtures which show unexpected synergistic activity against microorganisms. including bacteria, fungi and algae, which produce slime in aqueous systems or bodies which are objectionable from either an operational or aesthetic point of view. Specifically, the invention is directed to the use of compositions comprising a combination of a bromonitrostyrene and cetyl pyridinium bromide.

3,829,425
6,7-DICHLORO-p-DITHIINO(2,3-b)PYRIDINE-2,3,8-TRICARBONITRILE

Norman H. Kurihara, Walnut Creek, and Donald E. Bublitz, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Jan. 7, 1971, Ser. No. 104,799, now Patent No. 3,761,475, dated Sept. 25, 1973. Divided and this application Feb. 20, 1973, Ser. No. 333,941

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C **1 Claim**

Novel polycyanodithiino aromatic N-heterocyclic compounds are prepared. These are useful as fungicides and bactericides.

3,829,426

(5-NITRO-2-FURYL)-PYRIDINES

Ludwig Schroder, Ingelheim am Rhine, Klaus Thomas, Gau-Algesheim, and Hanns Goeth, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

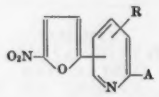
No Drawing. Filed Sept. 19, 1972, Ser. No. 290,334

Claims priority, application Germany, Sept. 22, 1971, P 21 47 288.8

Int. Cl. C07d *31/30*

U.S. Cl. 260—297 Z 6 Claims

Compounds of the formula



wherein A is hydroxyl, chlorine, alkoxy of 1 to 10 carbon atoms, dimethylamino-ethoxy or diethylamino-ethoxy, and

R is hydrogen, alkyl of 1 to 4 carbon atoms, pyridyl, phenyl or chloro-, hydroxy- and/or nitro-substituted phenyl;

the compounds are useful as antimicrobial agents, especially against gramnegative microorganisms, for the treatment of infections of the intestinal and urogenital tract.

3,829,427

8-ARYL-3-AZABICYCLO-[3,3,1]-NONANES

Adrian Charles Ward Curran, Reading, England, assignor to John Wyeth & Brother Limited, Berkshire, England

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,819

Claims priority, application Great Britain, Sept. 10, 1971, 42,269/71

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 9 Claims

The invention provides novel 8-aryl-3-azabicyclo-[3,3,1]-nonanes.

The novel compounds possess one or more of the following pharmacological activities; anti-ulcer activity, inhibition of blood platelet adhesion or aggregation or CNS depressant activity, or are intermediates for pharmacologically valuable compounds.

3,829,428

PROCESS FOR THE CATALYTIC VAPOR-PHASE SYNTHESIS OF ALKYLPYRIDINES

Charles W. Hargis, Johnson City, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 1, 1972, Ser. No. 285,789

Int. Cl. C07d *31/08*

U.S. Cl. 260—290 P 3 Claims

Process for the vapor-phase production of 2- and 4-picoline which comprises contacting a mixture of ammonia and acetaldehyde in the vapor-phase at an elevated temperature in the presence of a catalyst of silica-alumina and a co-catalyst selected from lithium phosphate, niobium pentoxide, tantalum pentoxide, bismuth trioxide, antimony (IV) oxide, or a mixture of antimony (IV) oxide and postassium oxide.

3,829,429

CATALYTIC SYNTHESIS OF SUBSTITUTED PYRIDINES FROM ACETYLENES AND NITRILES

Robert A. Clement, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 1,324, Jan. 7, 1970. This application Nov. 22, 1972, Ser. No. 308,838

Int. Cl. C07d *31/04*

U.S. Cl. 260—290 P 4 Claims

Novel process for the preparation of substituted pyridines comprising contacting an alkyl, alkylene or aryl substituted nitrile with at least one acetylenic compound of the formula $R^1—C\equiv C—R^2$, wherein R^1 and R^2 may be H, alkyl, alkoxy, alkenyl or aralkyl at about 150° C.–600° C. in the presence of a cobalt catalyst.

3,829,430

METHOD FOR THE PREPARATION OF TETRAHALO-4-(ALKYLSULFONYL)PYRIDINES

Demetrios Kyriacou, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 11, 1973, Ser. No. 322,882

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 F 2 Claims

Tetrahalo-4-(alkylsulfonyl)pyridines are prepared by a method which comprises dissolving an appropriate tetrahalo-4-(alkylthio)pyridine or tetrahalo-4-(alkylsulfinyl)pyridine in concentrated sulfuric acid followed by the addition thereto of aqueous hydrogen peroxide and reacting the mixture at a temperature between 20° and 110° C. The products of this invention are useful as pesticides for the control of various bacteria and fungal pests.

3,829,431

PROCESS FOR THE PREPARATION OF CERTAIN INDOLOBENZAZEPINE DERIVATIVES

Joel G. Berger, Freeport, and Sonia R. Teller, New York, N.Y., assignors to Endo Laboratories, Inc., Garden City, N.Y.

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,301

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 A 10 Claims

A two-step process for the preparation of 1,2,3,4,8,9-hexahydro-(3-substituted)pyrido[4',3':2,3]indolo[1,7-ab][1]benzazepines, useful as tranquilizers and/or analgesics in warm-blooded animals, or as intermediates in the preparation of these, involves reaction of N-nitrosoiminodibenzyl with 4-piperidone or an N-substituted derivative of 4-piperidone in the presence of zinc and acetic acid, and cyclization of the resulting hydrazone with strong acid.

3,829,432

PROCESS FOR THE OXIDATION OF QUINOLINE

Jacques D. V. Hanotier and Monique G. S. Hanotier-Bridoux, Brussels, Belgium, assignors to Labofina S.A., Brussels, Belgium

No Drawing. Filed Apr. 2, 1973, Ser. No. 347,052

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 R 9 Claims

A process for the oxidation of quinoline into quinolinic acid which comprises reacting qiunoline with a cobalt salt in a molar ratio of quinoline to cobalt salt lower than 2,

while maintaining a concentraiton of cobaltic ions such that $2x-A$ is between 0.1 and 1.5, x and A being respectively the molarity of said cobaltic ions and said cobalt salt in the reaction mixture, such reaction being carried out at a temperature between 40 and 150° C. in the presence of an aliphatic carboxylic acid having from 2 to 4 carbon atoms and in the presence of molecular oxygen at a partial pressure of from 0.2 to 20 atmospheres.

3,829,433

SUBSTITUTED PIPERIDINOALKANONE OXIME DERIVATIVES

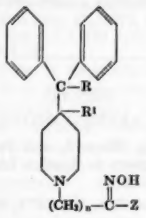
Albert A. Carr, Cincinnati, C. Richard Kinsolving, Terrace Park, and Donald R. Meyer, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,822

Int. Cl. C07d *29/28*

U.S. Cl. 260—293.79 **12 Claims**

Novel compounds useful as antihistamine agents, antiallergy agents, and bronchodilators are represented by the following formula



wherein R represents hydrogen or hydroxy; R^1 represents hydrogen; or R and R^1 taken together form a second bond between the carbon atoms bearing R and R^1; n is a positive whole integer of from 1 to 3; Z represents thienyl, phenyl, or substituted phenyl wherein the substituents on the substituted phenyl may be attached at the ortho, meta, or para positions of the phenyl ring and are selected from halogen, a straight or branched lower alkyl chain of from 1 to 4 carbon atoms, a lower alkoxy group of from 1 to 4 carbon atoms, a di(lower)alkylamino group, or a saturated monocyclic heterocyclic group such as pyrrolidino, piperidino, morpholino, or N-(lower)alkylpiperazino. Pharmaceutically acceptable acid addition salts and individual geometric isomers of compounds of the above formula are also included as a part of this invention.

3,829,434

PIPERIDINESULFONYLUREA DERIVATIVES

George R. Evanega, Ledyard, Donald E. Kuhla, Gales Ferry, and Reinhard Sarges, Mystic, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Nov. 10, 1972, Ser. No. 305,594

Int. Cl. C07d *31/50*

U.S. Cl. 260—293.56 **10 Claims**

A series of novel 1-piperidinesulfonylurea compounds derived from a nitrogen-containing monocarboxylic acid have been prepared by reacting an appropriate sulfamide with an organic isocyanate or a trisubstituted urea equivalent thereof. The sulfamylureas so obtained are useful in therapy as oral hypoglycemic agents. Typical members include those compounds derived from 2-methoxynicotinic acid, of which 1-(bicyclo[2.2.1]hept-5-en-2-yl-*endo*-methyl) - 3 - {4-[2-(2-methoxynicotinamido)ethyl]-1-piperidinesulfonyl}-urea is a most preferred embodiment.

3,829,435

2,5-DICHLOROTHIAZOLO [5,4-d] THIAZOLE AND PROCESS FOR PREPARING SAME

Gunther Beck and Hans Holtschmidt, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

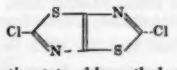
No Drawing. Filed Mar. 7, 1973, Ser. No. 338,708

Claims priority, application Germany, Mar. 25, 1972, P 22 14 610.7

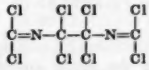
Int. Cl. C07d *91/42*

U.S. Cl. 260—306.8 F **3 Claims**

2,5-dichlorothiazolo[5,4-d] thiazole having insecticidal properties of the formula:



is prepared by reacting tetrachloroethylene-bis-(isocyanide dichloride) having the formula:



with at least the stoichiometrically necessary quantity of sulphur at a temperature in the range of from 150° to 350° C.

3,829,436

3-[(AMINO)-PHENYL]INDOLINE COMPOUNDS AND PROCESS FOR MANUFACTURING THE SAME

James J. Krutak, Sr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 20, 1972, Ser. No. 264,688

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 **8 Claims**

Novel 3-[(amino)-phenyl]indoline compounds are prepared by reacting certain aromatic amines with α-haloaldehydes or derivatives thereof. These compounds are useful as intermediates for the preparation of Fischer's bases, cyanine dyes, azo dyes and active color photographic developers.

3,829,437

SUBSTITUTED-PHENYL-N-ALKYL-N-THRIHALOMETHYLTHIO-CARBAMATES

Gerhard Zumach, Cologne, Engelbert Kühle, Bergisch Gladbach, and Wolfgang Behrenz and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

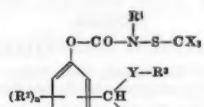
No Drawing. Filed Mar. 14, 1972, Ser. No. 234,663

Claims priority, application Germany, Mar. 19, 1971, P 21 13 454.3

Int. Cl. C07d *13/04, 71/00*

U.S. Cl. 260—327 M **8 Claims**

Substituted - phenyl-N-alkyl-N-trihalomethylthio-carbamates of the general formula



(I)

in which

X is chlorine, fluorine or bromine,

n is 0, 1 or 2,

R^1 is lower alkyl,

R^2 is lower alkyl or alkoxy, halogen or nitro,
Y and Z each independently is oxygen or sulfur, and
R^3 and R^4 each independently is lower alkyl, alkenyl or alkynyl, or together are an alkylene radical completing a 5- to 7-membered saturated heterocyclic ring optionally substituted by at least one of lower alkyl or alkoxy radicals, halogen and nitro,

which possess insecticidal, acaricidal and fungicidal properties.

3,829,438

PROCESS FOR STABILIZING PROPANESULTONE

Akiji Ikegami and Hideo Morita, Arai, Japan, assignors to Daicel Ltd., Osaka, Japan

No Drawing. Filed Mar. 22, 1972, Ser. No. 236,994

Claims priority, application Japan, Mar. 24, 1971, 46/17,005

Int. Cl. C07d *89/06*

U.S. Cl. 260—327 S **2 Claims**

Propanesultone is stabilized by adding at least one compound selected from the group consisting of aliphatic amines, alicyclic amines, aralkylamines, non-aromatic cyclic amines, N-alkyl-substituted aromatic amines, aminoalcohols, amine character nitrogen containing carboxylic acids having 2 to 10 carbon atoms and their esters, amides, pyridines, quinolines, and reaction products of these compounds with propanesultone.

3,829,439

PROCESS FOR PREPARING COMPOUNDS OF THE BENZOTHIOXANTHENE SERIES

Ernst Spietschka, Oberauroff, Taunus, and Josef Landler, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 10, 1972, Ser. No. 270,257

Claims priority, application Germany, July 10, 1971, P 21 34 518.6

Int. Cl. C07d *65/16*

U.S. Cl. 260—328 **9 Claims**

Process for preparing compounds of the benzothioxanthene series, wherein compounds of the 1-(2'-aminophenylmercapto)naphthalene series or of the 1-phenylmercapto - 8 - amino - naphthalene series are reacted in a N,N-dialkylated acid amide with compounds that yield nitrosyl groups and the diazonium compounds so obtained are heated in the presence of copper or copper salts. This process is suited for all compounds which contain the benzothioxanthene ring, independently of their substituents. The products obtained by this process have a markedly higher purity and are obtained in a higher yield as compared to other processes.

3,829,440

XANTHENE DERIVATIVES

Albert A. Carr, Cincinnati, and Joyce F. Grunwell, Hamilton, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,147

Int. Cl. C07d *7/42, 65/16*

U.S. Cl. 260—335 **7 Claims**

Novel 3,6-bis basic ethers and thioethers of 9-(substituted)benzylidenexanthene, their preparation and use for the prevention and inhibition of viral infections are disclosed.

3,829,441

GUANIDINOALKYLBENZODIOXAN DERIVATIVES

John Nicholson Gardner, Wayne, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 251,471, Jan. 15, 1963, now Patent No. 3,360,529, dated Dec. 26, 1967. This application Nov. 1, 1967, Ser. No. 679,670

Claims priority, application Great Britain, Jan. 29, 1962, 3,340/62

The portion of the term of the patent subsequent to Dec. 26, 1984, has been disclaimed

Int. Cl. C07d *15/18*

U.S. Cl. 260—340.3 **1 Claim**

The preparation of a group of new compounds having antihypertensive activity and characterized by being guanidinoalkyl-1,4-benzodioxans. The compounds are most easily prepared by reacting a 2-aminoalkyl-1,4-benzodioxane with cyanamide.

3,829,442

INSECTICIDAL 1,3-BENZODIOXOL DERIVATIVES

Hans-Peter Schelling, Oberwil, and Fritz Schaub, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

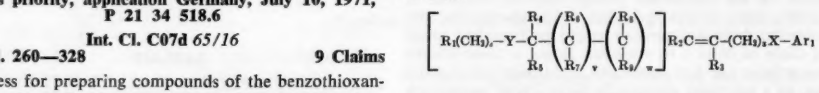
No Drawing. Filed Dec. 13, 1971, Ser. No. 207,633

Claims priority, application Switzerland, Dec. 14, 1970, 18,472/70; Sept. 17, 1971, 13,599/71; Oct. 6, 1971, 14,521/71; Nov. 11, 1971, 16,357/71

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **24 Claims**

The present invention concerns novel compounds of the formula:



wherein R_1 to R_{11} have various significances including e.g. alkyl, X and Y include O and S and *s*, *v* and *w* are whole numbers and Ar_1 is phenyl or substituted phenyl.

The compounds possess insecticidal properties.

3,829,443

SYNTHESIS OF 3-(3'-CARBOXY - 4' - HYDROXY-1'-NAPHTHYL) - 3 - (3''-CARBOXY-4''-HYDROXY-1''-NAPHTHYL)NAPHTHALIDE

Henry Bader, Newton Center, and Susan C. January, Wellesley Hills, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Feb. 28, 1973, Ser. No. 336,619

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.2 R **13 Claims**

Carboxy-substituted 1-naphthol naphthalide indicator dyes are prepared by reacting a 2-carboxy-1-naphthol and a 3-acyloxy-3-(3'-lower carboalkoxy-4'-hydroxy-1'-naphthyl)naphthalide in the presence of a catalyst having a high dipole moment to form the corresponding dye precursor which is then hydrolyzed to yield the corresponding indicator dye product.

3,829,444

4 - AZIDOCARBONYLPHTHALIC ANHYDRIDE, 4-ISOCYANATOPHTHALIC ANHYDRIDE, AND 4-LOWER ALKOXYCARBONAMIDO PHTHALIC ANHYDRIDE

Reinhard H. Richter, Hamden, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,376
Int. Cl. C07c *63/14*
U.S. Cl. 260—346.3 4 Claims

The compounds 4-azidocarbonylphthalic anhydride, 4-isocyanatophthalic anhydride, and the lower-alkyl carbamates obtained by reacting the latter isocyanate with a lower-aliphatic alcohol, are described. A process for the preparation of a polyimide by heating these compounds alone or in admixture with other polyisocyanates is also described. The 4-azidocarbonylphthalic anhydride is an intermediate for the 4-isocyanatophthalic anhydride.

3,829,445

3-(3'-LOWER CARBOALKOXY - 4' - HYDROXY-1'-NAPHTHYL)-3-(3''-CARBOXY - 4'' - HYDROXY-1''-NAPHTHYL)NAPHTHALIDE

Michael H. Feingold, Pinehurst, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Dec. 11, 1972, Ser. No. 314,094
Int. Cl. C07d *7/06*
U.S. Cl. 260—343.2 R 8 Claims

This invention relates to the synthesis of naphthol naphthalide indicator dyes and dye precursors by reacting a 3-(3'-lower carboalkoxy-4'-oxo-1'-naphthylidene)naphthalide, an organic carboxylic acid and a 2-carboxy-1-naphthol in the presence of base to yield the corresponding 3-(3'-lower carboalkoxy-4'-hydroxy-1'-naphthyl)-3-(3''-carboxy-4''-hydroxy-1'' - naphthyl)naphthalide dye precursor and hydrolyzing the dye precursor to yield the corresponding indicator dye product.

3,829,446

OXOBENZOFURAN INTERMEDIATES

Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application Oct. 15, 1970, Ser. No. 81,162, now Patent No. 3,676,463. Divided and this application Apr. 21, 1972, Ser. No. 246,491
Int. Cl. C07d *5/34*
U.S. Cl. 260—343.3 3 Claims

A series of novel 2-oxo-2,3-dihydrobenzofuran-3-carboxamides have been prepared, including their pharmaceutically acceptable salts. These compounds are useful in therapy as non-steroidal anti-inflammatory agents. Alternate methods of preparation are provided and the principal synthetic route is described in detail.

3,829,447

(—)-9-OXO-5(S)-HYDROXY DECANOIC ACID LACTONE

Julius Berger, Passaic, and Michael Rosenberger, Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Jan. 12, 1972, Ser. No. 217,294, now Patent No. 3,732,268, which is a division of application Ser. No. 57,371, July 22, 1970, now Patent No. 3,657,070. Divided and this application Jan. 31, 1973, Ser. No. 328,222
The portion of the term of the patent subsequent to Dec. 1, 1987 has been disclaimed
Int. Cl. C07d *7/06*
U.S. Cl. 260—343.5 1 Claim

Optically active 9-oxo-5(S)-hydroxy-decanoic acid is prepared by selective microbiological reduction of 5,9-dioxo-decanoic acid. The product acid is converted to levorotatory 9-oxo-5(S)-hydroxy-decanoic acid lactone by treatment of the reaction medium with a strong mineral acid. The aforesaid lactone is useful as an intermediate in the total synthesis of medicinally valuable, optically active steroids.

3,829,448

PROCESS FOR PRODUCING γ-LACTONES AND CYCLIC ETHERS

Junichi Kanetaka, Takashi Shimodaira, and Shoichiro Mori, Ami, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

No Drawing. Filed June 11, 1971, Ser. No. 152,455
Claims priority, application Japan, June 18, 1970, 45/52,394; July 17, 1970, 45/62,680
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 4 Claims

A nickel-base hydrogenation catalyst comprises nickel and an additive metal in a state of intimately close combination, the additive metal being germanium or a metal of Group I–A or II–A of the Periodic Table. This catalyst is effective when used in the catalytic hydrogenation of a dicarboxylic anhydride or a partially hydrogenated product thereof thereby to produce a corresponding cyclic lactone or cyclic ether.

3,829,449

ORGANICALLY SUBSTITUTED SODIUM ALUMINUM HYDRIDES AND METHOD OF MAKING AND USING THE SAME

Jaroslav Vit, Bohuslav Casensky, and Milan Mamula, Prague, and Jiri Machacek, Rez. Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Original application Nov. 10, 1966, Ser. No. 594,971, now Patent No. 3,652,622. Divided and this application June 24, 1971, Ser. No. 136,594
Claims priority, application Czechoslovakia, Nov. 13, 1965, 6,771/65; Mar. 26, 1966, 2,009/66, 2,010/66
Int. Cl. C07d *5/16, 7/14*
U.S. Cl. 260—345.9 5 Claims

The present invention relates to sodium aluminum hydrides substituted by organic groups.

3,829,450

POLYHALOSUBSTITUTED POLYHYDROPOLYCYCLICDICARBOXYLIC ACID AND ANHYDRIDE

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Nov. 1, 1972, Ser. No. 302,988
Int. Cl. C07c *63/18, 63/38*
U.S. Cl. 260—346.3 6 Claims

Novel compounds comprising polyhalo-substituted polyhydropolycyclicdicarboxylic acids or anhydrides thereof as exemplified by 5,6,7,8,9,9-hexachloro-6,7-dibromomethylene - 1,2,3,4,4a,5,8,8a-octahydro-5,8-methano-2,3-naphthalenedicarboxylic anhydride possessing certain physical properties such as being flameproof or fire resistant.

3,829,451

PROCESS FOR PRODUCING TRIMELLITIC ANHYDRIDE

Jean Berthoux, Decines, and Claude Gerbelot-Barrillon, Lyon, France, assignors to Progil, Paris, France

No Drawing. Continuation of abandoned application Ser. No. 781,267, Dec. 4, 1968. This application Dec. 23, 1971, Ser. No. 211,676
Claims priority, application France, Dec. 29, 1967, 134,511
Int. Cl. C07c *63/32*
U.S. Cl. 260—346.4 8 Claims

A method for producing pure trimellitic anhydride from the reaction mixture obtained by liquid-phase oxidation of pseudo-cumene by air or oxygen in the presence of a catalyst, an aliphatic carboxylic acid solvent and, if desired, a dehydration agent such as benzene by subjecting the reaction mixture to a distillation under an absolute pressure of 200–800 mm. Hg and then rectifying the non-distilled portion under vacuum to yield pure trimellitic anhydride.

3,829,452

ANTHRAQUINONE DYESTUFFS

Klaus Wunderlich, Leverkusen, and Hans-Samuel Bien, Burscheid, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,147
Claims priority, application Germany, Feb. 29, 1968, P 16 44 626.7
Int. Cl. C09b *1/30, 1/34*
U.S. Cl. 260—372 **12 Claims**

5-sulfo-1-isopropylamino, 4-substituted-amino anthraquinone dyestuffs are provided having very good fastness properties when applied to synthetic and natural polyamide fiber materials.

3,829,453

OCTAHYDROANTHRACENE - 2 - AMINOACETIC ACIDS AND ESTERS AND MIXED ANHYDRIDES THEREOF

Lloyd H. Conover, Barham, near Canterbury, England, and Robert B. Woodward, Belmont, Mass., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Application Oct. 31, 1969, Ser. No. 873,077, now Patent No. 3,697,552, which is a division of application Ser. No. 569,052, Aug. 1, 1966, now Patent No. 3,509,184, which is a continuation-in-part of application Ser. No. 209,269, July 11, 1962, which in turn is a continuation-in-part of application Ser. No. 132,304, Aug. 18, 1961, both now abandoned. Divided and this application Mar. 8, 1972, Ser. No. 232,972
Int. Cl. C07c *49/76*
U.S. Cl. 260—351 **6 Claims**

The total synthesis of tetracycline-type antibiotics by a multi-step process beginning with 3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracenes comprising: (1) an aldol condensation with a glyoxalic acid ester to give a 2-carboxymethylidene-3,4,10-trioxo - 1,2,3,4,4a,9,9a,10 - octahydroanthracene ester; (2) Michael reaction of said ester with an amine to produce a 3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracene-2-(α-amino)acetic acid ester; (3) conversion of the triketone to the corresponding 4,10-diketone by (a) selective reduction of the Michael reaction product to the corresponding 3-hydroxy compound, followed by conversion of the 3-hydroxy compound to the corresponding 3-formyloxy compound and removal of the 3-formyloxy group by treatment with zinc dust to give a 4,10-dioxo - 1,2,3,4,4a,9,9a,10 - octahydroanthracene-2-(α-amino)acetic acid ester; or (b) conversion of the hydrochloride salt of the Michael reaction product to a lactone by reaction with p-toluene-sulfonic acid and treatment of the lactone with zinc dust formic acid; (4) conversion of the 4,10-diketo - 1,2,3,4,4a,9,9a,10 - octahydroanthracene-2-(α-amino)acetic acid to a mixed anhydride; (5) followed by acylation of a malonic acid ester with the mixed anhydride; (6) cyclization of the acyl malonate derivative to a 12a-deoxytetracycline which is then hydroxylated to a tetracycline. The preparation of the 3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracenes from benzoyl halides by (a) Friedel-Crafts reaction of a benzoyl halide with a pyrocatechol ether, e.g., a di-(lower)alkyl ether, to produce a 3,4-di-(lower)alkoxybenzophenone; (b) conversion of the benzophenone by partial or complete reduction of the carbonyl group by chemical or catalytic methods to a 3,4-di-(lower)alkoxy diphenyl methanol or 3,4-di(lower) alkoxy diphenyl methane; or to a 3,4-di-(lower)alkoxy diphenyl alkane via a Grignard reaction and reduction of the thus-produced alkanol; (c) oxidation of the 3,4-di-(lower)alkoxy diphenyl alkane, or the corresponding dihydroxy compound, to a dienedioic acid ester or dienedioic acid; (d) hydrogenation of the dienedioic acid compound to a benzyl adipic acid derivative; (e) cyclization of said compound to a 2-(2-carbalkoxyethyl)-4-tetralone by means of dehydrating or dehydrohalogenating agents; (f) cyclization of the 4-tetralone derivatives by condensation with a dialkyloxalate to give a 2-carbalkoxy 3,4,10-trioxo-octahydroanthracene; and (g) removal of the 2-substituent by decarboxylation. The intermediates and final products are useful as bactericides and/or chelating agents.

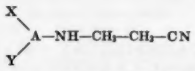
3,829,454

PROCESS FOR PREPARING N-MONO-(β-CYANOETHYL)-ARYLAMINES

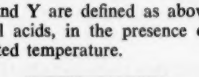
Hans Jakob Schladetsch, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,126
Claims priority, application Germany, Dec. 16, 1969, P 19 63 010.5; Nov. 16, 1970, P 20 56 215.6, P 20 56 216.7
Int. Cl. C07c *121/02*
U.S. Cl. 260—465 E **6 Claims**

Process for preparing N-(β-cyanoethyl)-arylamines of the formula



wherein A represents phenyl, naphthyl, anthracenyl or anthraquinonyl, X stands for hydrogen, fluorine, chlorine or bromine atoms, alkyl of C_1 to C_5, alkoxy of C_1 to C_4, trifluoromethyl, phenyl, phenoxyl, benzoyl-alkylsulfonyl of C_1 to C_6, N,N-dialkyl-amidosulfone of C_2 to C_8 and phenylazo, Y represents hydrogen, fluorine or chlorine atoms, a nitro group, alkoxy of C_1 to C_4 and alkyl-fluoroalkyl-alkoxy of C_1 to C_4, by reacting a N-(β-cyanoethyl)-aryl-formamide of the formula



wherein A, X and Y are defined as above, with diluted aqueous mineral acids, in the presence of a solubilizer and at an elevated temperature.

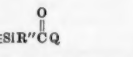
3,829,455

ARYL KETONE CONTAINING ORGANOSILICON MATERIALS

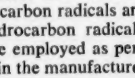
Edward V. Wilkus, 50 Autumn Drive, Monroe, Conn. 06468, and Abe Berger, 1504 Barclay Place, Schenectady, N.Y. 12309

No Drawing. Application Mar. 17, 1972, Ser. No. 235,811, which is a continuation-in-part of application Ser. No. 724,300, Feb. 2, 1968, now Patent No. 3,544,595, which in turn is a division of application Ser. No. 591,118, Nov. 1, 1966, now Patent No. 3,391,109. Divided and this application Mar. 14, 1973, Ser. No. 341,161
Int. Cl. C07f *7/08, 7/10*
U.S. Cl. 260—448.2 B **4 Claims**

One class of organosilicon materials are provided having chemically combined



units, where R″ is a divalent hydrocarbon radical and Q is a radical selected from aryloxyaryl, arylthioanyl, arylsulfonylaryl, and certain heteroaromatic radicals. In addition, organosilicon polymers and copolymers are provided having chemically combined



units, where Q′ is a radical selected from Q radicals, nonvalent aromatic hydrocarbon radicals and halogenated monovalent aromatic hydrocarbon radicals. The monomers and polymers can be employed as perfum oil bases, in cosmetics and as fluids in the manufacture of elastomers and resins.

3,829,456

METHOD FOR MAKING t-BUTYL 2,4,5-TRICHLORO PHENYL CARBONATE

Harold Berman, Norwich, N.Y., assignor to Morton-Norwich Products, Inc.

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,626

Int. Cl. C07c *69/00*

U.S. Cl. 260—463 1 Claim

A process for preparing t-butyl 2,4,5-trichlorophenyl carbonate, useful in the synthesis of peptides.

3,829,457

PROCESS FOR THE PRODUCTION OF ALKYL-SULFURIC ACIDS AND CORRESPONDING SALTS

Emilio Berrotti, Via Kennedy 2, San Donato Milanese, Italy, and Paolo Koch, Via Cavour 5, San Giuliano Milanese, Italy

No Drawing. Filed July 31, 1972, Ser. No. 276,466

Claims priority, application Italy, July 31, 1971, 27,013/71

Int. Cl. C07c *141/04*

U.S. Cl. 260—459 9 Claims

The present invention refers to a process for the preparation of alkyl-sulfuric acids and corresponding salts starting from alcohols by a new sulfatation reaction with O_2 and SO_2 in the presence of transition metal compounds as catalyst. Many sulfuric derivatives of primary alcohols are known which have the OSO_3H group directly bound to the hydrophobic radical.

They form one of the more important classe of synthetic surfactants owing to their great use in many different fields. They can be used as detergents, foaming agents, imbibition agents, dispersing agents and emulsioning agents.

3,829,458

PROCEDURE FOR THE CONTINUOUS MANUFACTURE OF ORGANIC ISOCYANATES

Peter Horn, Ingelfingen, and Ludwig Schuster, Ludwigshafen, Germany, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 1, 1972, Ser. No. 311,217

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 PH 4 Claims

A procedure for the manufacture of organic isocyanates from primary organic amines and phosgene in an inert organic solvent, characterized by carrying the reaction out continuously in packed reaction vessels, preferably by recycling the reaction mixture by means of the so-called transition flow.

3,829,459

HYDROXAMIC ACID ESTERS OF PENTANE-CARBOXYLIC ACIDS

Harvey E. Alburn, West Chester, Donald E. Clark, Norristown, Norman H. Grant, Wynnewood, and Milton Lapidus, Rosemont, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Nov. 5, 1969, Ser. No. 874,381, now Patent No. 3,703,543. Divided and this application May 22, 1972, Ser. No. 255,748

Int. Cl. C07c *119/00*

U.S. Cl. 260—453 R 6 Claims

The compounds are hydroxamic acids of alicyclic amino acids, and esters of said compounds, all of which have valuable pharmacodynamic properties in that they suppress the immune response in warm-blooded animals.

3,829,460

PREPARATION OF TRIFLUOROMETHYL AROMATIC ISOCYANATES

Gerhard Buttner, Cologne, and Erich Klauke, Odenthal-Hahnenberg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 21, 1972, Ser. No. 265,021

Claims priority, application Germany, July 6, 1971, P 21 33 467.8

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 P 4 Claims

Side-chain-fluorinated aromatic isocyanates are obtained in high yield by heating the corresponding trichloromethyl phenyl isocyanates with antimony trifluoride in the absence of solvents. Compounds made by this process include 3,3' - bis-(trifluoromethyl)-4,4'-diisocyanato-diphenyl difluoromethane, 2,4 - bis-(trifluoromethyl)-phenyl isocyanate, 2,5-bis-(trifluoromethyl)-phenyl isocyanate, and 2,4-bis-(trifluoromethyl)-phenyl-1,5-diisocyanate.

3,829,461

DYESTUFFS AND PROCESS FOR THEIR PRODUCTION

Roderich Raue, Winfried Kruckenberg, and Ernst-Heinrich Rohe, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

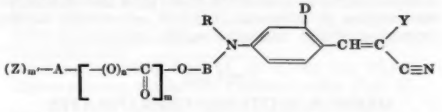
No Drawing. Filed Jan. 4, 1965, Ser. No. 423,361

Claims priority, application Germany, Jan. 17, 1964, F 41,769

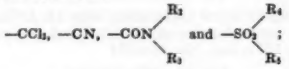
Int. Cl. C07c *121/60, 121/70*

U.S. Cl. 260—465 D 9 Claims

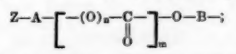
A dyestuff of the formula:



wherein Z stands for a member selected from the class consisting of hydrogen,



m and *m'* stand for an integer ranging from 0 to 1; *n* stands for an integer ranging from 0 to 1; A stands for an arylene radical selected from the class consisting of a radical of the benzene and naphthalene series, B stands for an alkylene radical having 2 to 4 carbon atoms, R stands for a member selected from the class consisting of lower alkyl, lower alkyl aryl, cycloalkyl and



D stands for a member selected from the class consisting of hydrogen, lower alkyl, lower alkoxy and halogen; Y stands for a member selected from the class consisting of —CN, $—SO_2R_6$, $—COOR_7$ and

the radicals R_2, R_3, R_4, R_5, R_8 and R_9 stand for members selected from the class consisting of hydrogen, lower al-

kyl, lower alkyl aryl, cycloalkyl and aryl; the radicals R_1, R_6 and R_7 stand for members selected from the class consisting of lower alkyl, lower alkyl aryl, cycloalkyl and aryl; the dyestuff being free of sulfonic acid and carboxylic acid groups.

The dyestuffs of this invention are particularly suitable for the dyeing and printing of aromatic polyesters, polycarbonates, polyamides, and cellulose esters.

3,829,462

ANTHRANILIC ACID ESTERS NUCLEARLY SUBSTITUTED WITH OPTIONALLY SUBSTITUTED PHENYL-ALKYL

Heinrich Krimm and Dieter Freitag, Krefeld-Bockum, and Immo Boie, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

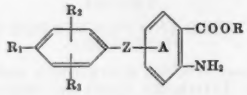
No Drawing. Filed Jan. 28, 1971, Ser. No. 110,776

Claims priority, application Germany, Jan. 28, 1970, P 20 03 707.4; Dec. 29, 1970, P 20 64 305.4

Int. Cl. C07c *101/54*

U.S. Cl. 260—471 R **9 Claims**

The invention relates to anthranilic acid esters which are alkylated in the nucleus represented by the general formula



and to a process for their preparation. R, R_1, R_2, R_3 and Z have the meaning as indicated in the specification.

The anthranilic acid esters according to this invention are suitable for the stabilisation of viscosity in the production of polyamides and they are also suitable for the production of azo dyes and indazolones which can be used as color forming couplers.

Such anthranilic acid esters which have groups able for condensation or additional reactions are suitable for the production of high molecular weight compounds.

3,829,463

OXIME SUBSTITUTED CARBANILATES

Gabriel Kornis and Eldon G. Nidy, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application May 19, 1971, Ser. No. 145,016, now abandoned. Divided and this application May 29, 1973, Ser. No. 364,823

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **2 Claims**

A number of new m-aminobenzaldoxime derivatives have been found to possess herbicidal and plant growth regulator activity. The amine grouping has been converted into an urea, thiourea, carbamate or thiocarbamate function, and the oxime group has been converted by the formation of O-ethers.

3,829,464

BENZALDOXIME-META-CARBAMATES

Gabriel Kornis and Eldon G. Nidy, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application May 19, 1971, Ser. No. 145,016, now abandoned. Divided and this application May 29, 1973, Ser. No. 364,822

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **2 Claims**

A number of new m-aminobenzaldoxime derivatives have been found to possess herbicidal and plant growth regulator activity. The amine grouping has been converted into an urea, thiourea, carbamate or thiocarbamate function, and the oxime group has been converted by the formation of O-ethers.

3,829,465

4-(OXOALKOXY)BENZOIC ACIDS AND ESTER THEREOF

John B. Siddall and Clive A. Henrick, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Original application Nov. 12, 1970, Ser. No. 89,022, now Patent No. 3,723,467. Divided and this application Oct. 31, 1972, Ser. No. 302,470

Int. Cl. C07c *69/78*

U.S. Cl. 260—473 R **7 Claims**

Ethers of benzoic acid and benzoic acid esters having an oxo-substituted side chain which are useful for insect control.

3,829,466

PERFLUOROALKANESULPHONAMIDES

Adolf Staffe, Opladen, and Klaus Gerlach, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

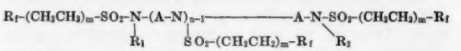
No Drawing. Filed Oct. 26, 1972, Ser. No. 300,892

Claims priority, application Germany, Oct. 26, 1971, P 21 53 270.7

Int. Cl. C07c *143/74*

U.S. Cl. 260—481 R **21 Claims**

Perfluoroalkanesulphonamides of the formula



in which

R_f, A, R_1, R_2, *n* and *m* have the meaning given in the disclosure below, a process for their manufacture and their use as oleophobic agents.

3,829,467

TETRAHYDRONAPHTHYLALKANOIC ACIDS AND THEIR DERIVATIVES

Julius Diamond, Lafayette Hill, and George Henry Douglas, Paoli, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

No Drawing. Filed July 3, 1972, Ser. No. 268,745

Int. Cl. C07c *63/50*

U.S. Cl. 260—501.16 **2 Claims**

Novel tetrahydronaphthylalkanoic acids and their derivatives such as alpha, 4-dichloro-5,6,7,8-tetrahydro-2-naphthylacetic acid and its diethylammonium salt, useful for the treatment of inflammation and associated pain and fever, are described.

3,829,468

PROCESS FOR THE PRODUCTION OF PEROXYACETIC ACID

George A. Serad, Charlotte, N.C., and Alexander F. MacLean, Durham, N.H., assignors to Celanese Corporation, New York, N.Y.

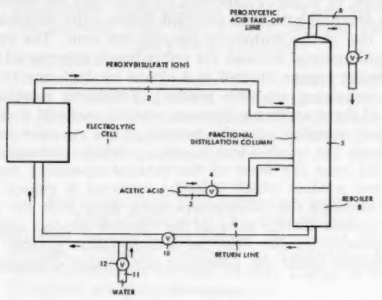
Continuation-in-part of abandoned application Ser. No. 48,962, June 23, 1970. This application June 21, 1972, Ser. No. 265,032

Int. Cl. C07b *3/00*; **C07c** *73/10*

U.S. Cl. 260—502 R **8 Claims**

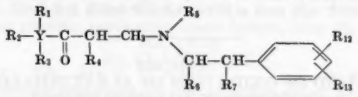
Peroxyacetic acid is produced by a process wherein aqueous peroxydisulfate ions are generated in an elec-

trolytic cell and reacted with acetic acid to form an aqueous solution of peroxyacetic acid and a peroxydisulfate reduction product. The peroxyacetic acid is separated from the peroxydisulfate reduction product and the latter can be recycled to the electrolytic cell for use in generating new peroxydisulfate ions.

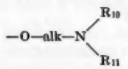


3,829,469
N-HYDROXYARYLALIPHATIC-AMINO-PROPIOPHENONES AND THE SALTS THEREOF
Kurt Thiele, Frankfurt am Main, and Klaus Posselt, Bergen-Enkheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed May 5, 1969, Ser. No. 821,952
Int. Cl. C07c *93/06*
U.S. Cl. 260—570.5 C **8 Claims**

Compounds are prepared having the general formula



where R_2 and R_3 are hydrogen, methoxy or nitro, Y is a phenyl or a condensed multi-ring aromatic group one or more rings of which can be partially or completely saturated, R_4 is hydrogen, methyl or ethyl, R_5 and R_6 are hydrogen or methyl, R_7 is hydrogen or hydroxy, R_1 is —O—alk—OH or



wherein alk is a straight or branch chain alkylene chain of 1 to 6 carbon atoms which can be hydroxy substituted, R_{10} and R_{11} are hydrogen, lower alkyl or lower alkenyl or are joined together with each other or alk to form a 5, 6 or 7 membered closed ring which can contain a further hetero atom such as oxygen, sulfur or nitrogen, R_{12} is hydroxyl or a straight or branched chain lower alkyl group of at least two carbon atoms, R_{13} is hydrogen, hydroxy or a straight or branched chain lower alkyl group with the proviso that if R_{12} is hydroxy R_{13} can be methyl. The compounds have pharmaceutical properties and are suited for the treatment of heart and circulatory conditions.

3,829,470
ALKYLPHENOL DISULFONATION PROCESS
Eric D. Hannah, Mill Valley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Jan. 13, 1972, Ser. No. 217,630
Int. Cl. C07c *143/42*
U.S. Cl. 260—512 R **4 Claims**

Two-step process for production of alkylphenol polysulfonic acids in which the alkylphenol is reacted with oleum in an initial sulfonation step at a temperature of 50 to 80° C. and digested at a lower temperature in the range of 0 to 50° C. to complete the incorporation of 1.5 to 2.0 sulfonic acid groups.

3,829,471
REACTIONS OF ALKYL SULTONES WITH HALIDE SALTS IN AQUEOUS SYSTEMS
Paul Kobetz and Kenneth L. Lindsay, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.
No Drawing. Filed Dec. 7, 1972, Ser. No. 312,949
Int. Cl. C07c *143/02*
U.S. Cl. 260—513 R **10 Claims**

It is disclosed that sultones and sulfonic acids and acidmix obtained by sulfonating olefin or olefin mixtures with SO_3 are converted into salts of sulfonic acids by a reaction in an aqueous system with a salt of a volatile acid.

3,829,472
METHOD FOR THE SEPARATION OF METHALLYL SULFONATE
Heinz Rassaerts, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
No Drawing. Filed Apr. 9, 1973, Ser. No. 349,429
Claims priority, application Germany, May 4, 1972, P 22 21 736.3
Int. Cl. C07c *143/16*
U.S. Cl. 260—513 B **3 Claims**

A method for separating sodium methallyl sulfonate from sodium chloride water solution by partial evaporation of the brine to a weight ratio of about 1.3–1.5:1 of sodium methallyl sulfonate and sodium chloride salts to water, to precipitate the sodium chloride followed by cooling to separate the methallyl sulfonate.

3,829,473
γ,γ-DIARYL-α,β-DIHALOCROTONIC ACIDS
Vaclav Jelinek, deceased, late of Prague, Czechoslovakia, by Vera Jelinkova and Vaclav Jelinek, heirs, Prague, Miroslav Semonsky, Prague, Jiri Hartl, Bratislava, and Alois Borovansky, Brno, Czechoslovakia, assignors to SPOFA, United Pharmaceutical Works, Prague, Czechoslovakia
No Drawing. Filed Nov. 18, 1970, Ser. No. 90,881
Claims priority, application Czechoslovakia, Nov. 18, 1969, 7,603/69
Int. Cl. C07c *63/60*
U.S. Cl. 260—515 A **11 Claims**

Novel therapeutic compounds of the γ,γ-diaryl-α,β-dihalocrotonic acid type specifically the dichloro and dibromo compounds and processes for the production thereof.

3,829,474
5,5-DIPHENYLPENT-4-ENOIC ACIDS AND RELATED COMPOUNDS
Eric Harold Billett, Harlowe, and David Miller, Sevenoaks, England, assignors to Beecham Group Limited, Brentford, Middlesex, England
No Drawing. Original application Aug. 3, 1970, Ser. No. 60,729, now Patent No. 3,736,347. Divided and this application Aug. 31, 1972, Ser. No. 285,366
Int. Cl. C07c *63/46, 63/48, 63/76*
U.S. Cl. 260—515 R **7 Claims**

Substituted alkenoic acids having two phenyl or lower alkoxyphenyl groups and certain derivatives have been found to have estrogenic, e.g., anti-fertility properties for treating menopausal disorders or for estrogenic replacement. Typical compounds are 2-carboxy-5,5-diphenyl-4-methylpent-4-enoic acids, 2-methyl-4-ethyl-5,5-diphenyl-2-carboxypent-4-enoic acid and 2,4-dimethyl-5-phenyl-5-(4-methoxy-phenyl)pent-4-enoic acid. The new compounds are formulated as tablets and capsules for oral use and as injectables with sterile water.

3,829,475
2-(CARBOXYPHENYL)ETHYL AND 2-(CARBOXYPHENYL)VINYL CYCLOPROPYL CARBINOLS
Joseph C. Collins, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Filed June 22, 1972, Ser. No. 265,333
Int. Cl. C07c *65/02*
U.S. Cl. 260—520 **3 Claims**

Aryl substituted diketones and keto-esters, useful as antiviral agents and insecticides, are prepared by reacting an arylalkyl or arylalkenyl iodide with a metal salt of the appropriate diketone or keto-ester.

3,829,476
PROCESS FOR OXIDATION OF PROPYLENE
Kantaro Yamada and Hiromichi Ishii, Ohotake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan
Filed Feb. 13, 1973, Ser. No. 332,127
Claims priority, application Japan, Feb. 15, 1972, 47/15,894
Int. Cl. C07c *47/22, 51/32, 57/04*
U.S. Cl. 260—533 N **11 Claims**

A process for producing acrolein and acrylic acid by bringing a mixed gas containing propylene and oxygen into contact at an elevated temperature in a vapor phase with a catalyst which is highly active and entails very little degrading effect of aging on its catalytic activity. According to this process, the total selectivity of acrolein and acrylic acid exceed 96% where the conversion of propylene is not less than 96%. The said catalyst contains phosphorus, tungsten, molybdenum, tellurium and oxygen, one combination selected from among (a) two-member combination of nickel and cobalt, (b) two-member combination of nickel and iron, (c) three-member combination of nickel, cobalt and bismuth and (d) three-member combination of nickel, iron and bismuth, and at least one member selected from the group consisting of tin, potassium and rubidium.

3,829,477
PROCESS FOR THE PREPARATION OF ACID CHLORIDES AND THEIR ACIDS
Jean-Claude Strini, Saint Auban, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France
No Drawing. Filed Nov. 23, 1970, Ser. No. 92,281
Claims priority, application France, Dec. 4, 1969, 6941890
Int. Cl. C07c *51/58*
U.S. Cl. 260—539 R **16 Claims**

A process for the preparation of acid chlorides and their corresponding acids by reaction of an aliphatic hydrocarbon having the formula $CCl_2{=}CXY$ and an organic acid having the formula CHWZ—COOH at a temperature within the range of 100° to 250° C., in the presence of ferric chloride and under hydrochloric acid pressure in which W, X, Y and Z are hydrogen, chlorine, a C_1 to C_2 alkyl group, or a chlorinated C_1 to C_2 alkyl group other than trichloromethyl.

3,829,478
PROCESS FOR PREPARING MONOCHLORO ACETIC ACID
Alexander Ohorodnik, Liblar, Kurt Sennewald, Hurth-Hermulheim, Joachim Hundeck, Hurth-Knapsack, and Paul Stutzke, Walberberg, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany
Filed Oct. 27, 1971, Ser. No. 192,871
Claims priority, application Germany, Oct. 29, 1970, P 20 53 115.1
Int. Cl. C07c *53/16*
U.S. Cl. 260—539 A **3 Claims**

Heterogeneous catalytic reactions are carried out continuously in liquid phase. A substantially uniform suspension of liquid starting material and fine particulate catalyst together with resulting reaction product is continuously conveyed upwardly in a reaction zone by the introduction, in accordance with the principles of an air-lift pump, of a gas or vaporous material near the bottom of the reaction zone, and recycled downwardly through a reflux line to the bottom of the reaction zone. The path of liquid material through the reflux line is interrupted by an injector system situated in a closed catalyst-separating zone containing reaction product. Following establishment of the reaction equilibrium, starting material is continuously supplied near the bottom of the reaction zone and crude but catalyst-free reaction product continuously removed near the head of the catalyst-separating zone. Reaction product which is to be removed is caused to travel through the catalyst-separating zone with the injector system therein towards the reaction product outlet at a velocity smaller than the sedimentation velocity of the catalyst under the prevailing operational conditions.

3,829,479
PREPARATION OF ALKYLDICHLOROPHOSPHINES
Alan Kent, Greetby Hill, Ormskirk, and Bryan Topley, Compton, Kinver, near Stourbridge, England, assignors to Minister of Supply, in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
No Drawing. Filed Mar. 22, 1955, Ser. No. 496,074
Int. Cl. C07f *9/28*
U.S. Cl. 260—543 P **4 Claims**

1. Process for the manufacture of a lower alkyl dichlorophosphine by decomplexing a complex compound of aluminium trichloride and the lower alkyl dichlorophosphine with an alkali chloride, wherein the decomplexing reaction is effected by heating the said complex compound with very finely divided alkali chloride substantially all of which will pass a screen of 100 mesh B.S.S.

3,829,480
METHOD OF OXIDATION OF ALKYLDIHALOGENPHOSPHINES TO THEIR OXIDES
Edward B. Trescott, 627 Forge Road, Whitemarsh, Md. 21162, and James C. Richards, 160 Alpine Trail, Sparta, N.J. 07871
No Drawing. Original application Feb. 4, 1970, Ser. No. 8,693, now abandoned. Divided and this application Apr. 27, 1972, Ser. No. 248,144
Int. Cl. C07f *9/38, 9/42*
U.S. Cl. 260—543 P **4 Claims**

A recycle method for oxidizing alkyldihalogenphosphines to their oxides by the reaction,

$$2RPX_2 + R\overset{O}{\overset{\|}{P}}(OH)_2 + 2X_2 \longrightarrow 3R\overset{O}{\overset{\|}{P}}X_2 + 2HX$$

wherein the oxygen donor is prepared by the reaction,

$$R\overset{O}{\overset{\|}{P}}X_2 + 2H_2O \longrightarrow R\overset{O}{\overset{\|}{P}}(OH)_2 + 2HX$$

wherein R is any alkyl group and X is any halide.

3,829,481
PROCESS FOR PREPARING A THIODIACYL HALIDE
Joel M. Kauffman, Sharon, Mass., assignor to I.C.I. America, Inc., Stamford, Conn.
No Drawing. Filed Mar. 12, 1969, Ser. No. 806,729
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 Y **4 Claims**

A process for preparing a thiodiacyl halide in a readily recoverable form by reacting together phosphorus trihalide and a thiodicarboxylic acid. The process can be used to prepare thiodipropionyl chloride from thiodipropionic acid.

3,829,482

PRODUCTION OF N-(1-ALKEN-1-YL)-CARBAMYL CHLORIDES

Albrecht Mueller, Frankenthal, Bernd Zeeh, Ludwigshafen, and Hans Kiefer, Wachenheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,181

Int. Cl. C07c *103/30*

U.S. Cl. 260—544 C **1 Claim**

Production of N-(1-alken-1-yl)-carbamyl chlorides by reaction of imidoacid esters with phosgene and the new N-(1-alken - 1 - yl)-carbamyl chlorides themselves. The products are starting materials for the production of plant protection agents, coating intermediates and plastics.

3,829,483

PROCESS FOR THE PREPARATION OF TRIFLUOROACETYL CHLORIDE

Peter-Paul Rammelt and Gunter Siegemund, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 22, 1973, Ser. No. 325,754

Claims priority, application Germany, Jan. 25, 1972, P 22 03 326.7

Int. Cl. C07c *51/58, 53/20*

U.S. Cl. 260—544 Y **6 Claims**

The invention relates to a process for the preparation of trifluoroacetyl chloride by reacting trifluoroacetyl fluoride and chlorinated hydrocarbon, capable of being fluorinated, in the presence of hydrogen chloride and optionally of hydrogen fluoride by passing a gaseous mixture of said compounds over a chromium oxide catalyst and isolating the wanted trifluoroacetyl chloride.

3,829,484

PRODUCTION OF SULPHONATED MATERIAL

Austen Edgar Sowerby and Brian John Akred, Cumberland, England, assignors to Albright & Wilson Limited, Oldbury, near Birmingham, Warwickshire, England

No Drawing. Filed May 14, 1971, Ser. No. 143,606

Claims priority, application Great Britain, May 15, 1970, 23,719/70

Int. Cl. C07c *143/84*

U.S. Cl. 260—545 R **21 Claims**

Sulphonic anhydrides, useful as sulphonating agents in reactions where a stronger agent than sulphonyl chloride is required are prepared by the reaction of from 1.4 to 1.9 moles of SO_3 per mole of aromatic compound. In order to improve the yield compounds forming complexes with SO_3 are added to the reaction mixture. These compounds are normally those known as sulphone inhibitors or those claimed for such a purpose in U.S. Application Numbers 28,494 and 28,500.

3,829,485

THIOUREA COMPOUNDS AND BIOCIDAL PREPARATIONS CONTAINING THEM

Henry Martin and Dieter Duerr, Basel, Hans Rudolf Hitz, Muttenz, and Marcus von Orelli, Muenchenstein, Switzerland, assignors to Ciba Limited, Basel, Switzerland

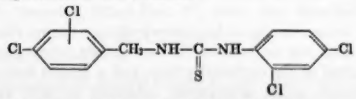
No Drawing. Continuation of application Ser. No. 84,466, Oct. 27, 1970, which is a continuation of application Ser. No. 698,080, Oct. 25, 1967, both now abandoned, which in turn is a division of application Ser. No. 536,266, Mar. 22, 1966, now Patent No. 3,483,291. This application Aug. 23, 1972, Ser. No. 282,993

Claims priority, application Switzerland, Mar. 25, 1965, 4,205/65

Int. Cl. C07c *157/00*

U.S. Cl. 260—552 R **3 Claims**

Compounds of the formula



These compounds have biocidal applications.

3,829,486

BIOCIDAL ACTIVE CARBAMYL HYDRAZONES

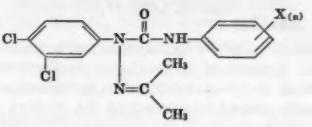
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Filed Mar. 9, 1973, Ser. No. 339,691

Int. Cl. C07c *133/04*

U.S. Cl. 260—554 **3 Claims**

New compounds corresponding to the generic formula:



wherein X is chloro and *n* is 1 or 2. The compounds are useful as biocides.

3,829,487

N-SUBSTITUTED-3,5-(TRIFLUOROMETHYL OR BROMO) BENZENESULFONAMIDES

Helmut H. Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of abandoned application Ser. No. 135,474, Apr. 19, 1971. This application Feb. 8, 1973, Ser. No. 330,533

Int. Cl. C07c *143/78, 143/80*

U.S. Cl. 260—556 AR **7 Claims**

Novel substituted benzenesulfonamides are useful as agents for the treatment of both mature and immature liver fluke infections. The benzenesulfonamide is substituted on the sulfonamide nitrogen with loweralkoxy, substituted loweralkyl and heterocyclic in which the sulfonamide nitrogen is included in the heterocyclic ring. The benzene ring is variously substituted at the 3- and 5-positions and unsubstituted or substituted with an amino group at the 4-position. Compositions containing these compounds for the treatment of mature and immature liver fluke infestation are also disclosed.

3,829,488

BIS-(o - N-SUBSTITUTED-CARBAMYLPHENYL) DISULFIDE AND MERCAPTO REDUCTION PRODUCT

Milton Wolf, West Chester, John H. Sellstedt, King of Prussia, and Richard L. Fenichel, Wyncote, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Mar. 6, 1972, Ser. No. 232,285

Int. Cl. C07c *103/22*

U.S. Cl. 260—558 S **1 Claim**

Bis(*o* - N - substituted-carbamylphenyl)disulfides, the mercapto reduction product and pharmaceutically acceptable salts thereof exhibit hypoglycemic activity in warm-blooded animals. The compounds may be prepared by the reaction of a primary or secondary amine with a (*o*-chlorocarbonylphenyl)disulfide followed by reduction of the disulfide linkage.

3,829,489

SUBSTITUTED PHENOXY- AND PHENYLTHIO-ACETATES AND DERIVATIVES THEREOF

Fred Y. Edamura, Concord, Calif., and Lennon H. McKendry and Eric R. Larsen, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 111,688, Feb. 1, 1971, now Patent No. 3,709,926. This application Oct. 20, 1972, Ser. No. 299,287

Int. Cl. C07c *103/22*

U.S. Cl. 260—559 B **5 Claims**

Disclosed herein are substituted phenoxy- and phenylthio-acetate compounds and derivatives thereof having utility as pesticides.

3,829,490

CYCLOALKANEBIS(METHYLAMINE) ISOMERIZATION

Werner H. Mueller, Gulf Breeze, and Charles R. Campbell, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,246

Int. Cl. C07c *87/38*

U.S. Cl. 260—563 D 8 Claims

The isomer ratio in a non-equilibrated mixture of the cis and trans isomers of a C_6–C_{14} cycloalkanebis(methylamine) such as 1,4-cyclohexanebis(methylamine) can be conveniently altered by contacting the mixture at 175°–290° C. with hydrogen in the presence of a hydrogenation catalyst and ammonia. A high yield of one of such isomers can be obtained by similarly contacting a mixture of such isomers wherein the ratio of said one isomer to the other of said isomers is lower than the corresponding equilibrium ratio of such isomers, selectively separating said one isomer from the contacted mixture and recycling the residual mixture for more of such contacting.

3,829,491

ORGANIC THERMOTROPIC NEMATIC COMPOUNDS

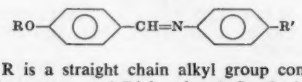
Elwood L. Strebel, % Vari-Light Corporation, 9770 Conklin Road, Cincinnati, Ohio 45242

No Drawing. Continuation-in-part of abandoned application Ser. No. 817,143, Apr. 17, 1969. This application May 24, 1973, Ser. No. 363,429

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 F 4 Claims

A new family of organic thermotropic nematic compounds comprising N-(para-substituted alkoxy-benzylidene)-anilines having also a para-n-butyl substituent on the aniline ring. These compounds have the following structural formula:



wherein R is a straight chain alkyl group containing 1 to 4 carbon atoms and R' is n-butyl. Synthesis involves combining the desired p-substituted benzaldehyde and p-n-butyl aniline in equimolar proportions in anhydrous ethyl alcohol with glacial acetic acid as catalyst. The resulting homologous series of compounds are useful as materials which undergo a change in optical properties under the influence of externally applied energy, preferred members of which, either individually or in binary mixtures, have melting points near room temperature, a broad nematic mesomorphic temperature range within an overall range of about 0° to about 70° C., low viscosity in the nematic phase, good stability, and substantially no color.

3,829,492

FUNGICIDAL SALICYLALDEHYDE HYDRAZONES AND AZINES

George A. Miller, Glenside, and Stanley A. Greenfield, Ambler, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,707

Int. Cl. C07c *109/16*

U.S. Cl. 260—566 B 2 Claims

Fungicidal compositions containing as the active ingredient salicylaldehyde hydrazones and novel azines derivable from them by reaction with an aldehyde or ketone. They are particularly effective in controlling cercospora blights.

3,829,493

PROCESS FOR PREPARING d-N,N' - BIS-(1 - HYDROXYMETHYLPROPYL)-ETHYLENE DIAMINE

Ivan Butula and Gordana Karlović, Zagreb, Yugoslavia, assignors to PLIVA Pharmaceutical and Chemical Works

No Drawing. Filed Feb. 8, 1973, Ser. No. 330,505

Claims priority, application Yugoslavia, June 9, 1972, 1,545/72

Int. Cl. C07c *91/12*

U.S. Cl. 260—584 R 3 Claims

The invention disclosed relates to a process for preparing d-N,N' - bis - (1-hydroxymethylpropyl)-ethylene diamine and the acid salts thereof by reducing d-4,4'-diethyl-2,2'-bisoxazolidine using either lithium aluminum hydride or sodium boron hydride.

3,829,494

STABILIZED 2-(2-AMINO ETHER) ETHANOL AND METHANE

Ernest Leon Yeakey and Philip Hotchkiss Moss, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Apr. 11, 1973, Ser. No. 350,003

Int. Cl. C07c *89/04*

U.S. Cl. 260—584 C 10 Claims

An improved 2-(2-aminoethoxy) ethanol composition for purifying gases containing acid gas impurities, such as natural gas, and a method for preparing same is disclosed. The improved 2-(2-aminoethoxy) ethanol compound, useful for removing impurities such as acid gases from natural gas has improved resistance against decomposition and/or degradation in the presence of said acid gases by incorporating into 2-(2-aminoethoxy) ethanol a stabilizing amount of a water soluble trialkanolamine.

3,829,495

METHOD OF PRODUCING DIMERIZED SATURATED KETONES

Yukio Mizutani, Tokuyama, Yusuke Izumi, Yamaguchi-ken, and Yoshiaki Watanabe, Hikari-shi, Japan, assignors to Tokuyama Sode Kabushiki Kaisha, Yamaguchi-ken, Japan

No Drawing. Continuation-in-part of application Ser. No. 824,673, May 14, 1969, which is a continuation-in-part of application Ser. No. 780,622, Dec. 3, 1968, both now abandoned. This application Jan. 30, 1970, Ser. No. 7,240

Int. Cl. C07c *45/00*

U.S. Cl. 260—586 R 10 Claims

This invention relates to a method of producing dimerized saturated ketones comprising the steps of heating ketones to be subsequently defined at a temperature of from 60–400° C., together with hydrogen in the presence of a catalyst comprising metallic palladium and a phosphate of at least one metal selected from the group consisting of zirconium, titanium, hafnium, and tin, the said ketones being selected from the group consisting of:

(a) at least one ketone having at least one or both of the two carbon atoms that are attached to the carbonyl group; and

(b) a ketone having at least two hydrogen atoms attached to either one or both of the two carbon atoms that are attached to the carbonyl group, and a ketone having no hydrogen atom whatsoever attached to said carbon atoms.

3,829,496

PROCESS FOR THE PRODUCTION OF 4,4'-DIBROMOBENZIL

Alexander Sieber, Muttenz, and Hermann Kny, Fullinsdorf, Switzerland, and Ward H. Oliver, Mobile, Ala., assignors to Ciba-Geigy AB, Basel, Switzerland, and Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 53,303, July 8, 1970. This application July 2, 1971, Ser. No. 159,565

Int. Cl. C07c *49/80*

U.S. Cl. 260—590 4 Claims

A new process is provided for producing 4,4'-dibromobenzil in high purity and in high yields by reacting benzoin and urea in the presence of an inert, water-insoluble organic solvent, brominating the intermediate 4,5-diphenylimidazol-2-one and oxidizing the obtained 4,5-bis-(4'-bromophenyl)-imidazol-2-one to 4,4'-dibromobenzil.

3,829,497

PREPARATION OF 1,4-BIS (PHENYLGLYOXALOYL) BENZENE

Stanley E. Wentworth, Bedford, Mass., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,398

Int. Cl. C07c *49/76*

U.S. Cl. 260—590 3 Claims

A method for the preparation of 1,4-bis (phenylglyoxaloyl) benzene comprising the steps of (a) reaction of cuprous phenylacetylide and p-diiodobenzene in the presence of hexamethylphosphoramide to produce p-bis (phenylethynyl) benzene, and (b) the oxidation of p-bis (phenylethynyl) benzene with N-bromosuccinimide in the presence of dimethylsulfoxide to produce 1,4-bis (phenylglyoxaloyl) benzene.

3,829,498

PROCESS FOR PREPARING 5-HYDROXY-1-TETRALONE

Jerome D. Genzer, Livingston, and George A. Conrad, Irvington, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 146,852, May 25, 1971. This application Apr. 16, 1973, Ser. No. 351,227

Int. Cl. C07c *49/82*

U.S. Cl. 260—590 5 Claims

An improved process for preparing 5-hydroxy-1-tetralone involving relatively mild reaction conditions uses 1,5-dihydroxynaphthalene as the starting material. An aqueous alcoholic solution of 1,5-dihydroxynaphthalene is allowed to react with one molar equivalent of gaseous hydrogen in the presence of a palladium reducing catalyst and an equimolar quantity of an alkali metal hydroxide. High yields of pure product are obtained.

3,829,499

PRODUCTION OF DIETHYL KETONE

Kenzie Nozaki, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Dec. 17, 1969, Ser. No. 885,997

Int. Cl. C07c *45/02*

U.S. Cl. 260—597 A 12 Claims

Production of diethyl ketone at high selectivity and rate by the reaction of ethylene, carbon monoxide and hydrogen under mild conditions of temperature and pressure in the presence of a temperature-stable cobalt carbonyl-nitrile catalyst system, optionally containing ammonia or a primary or tertiary amine as catalyst promoter.

3,829,500

OXYBIS(BENZENESULFONYLPOLYALKOXYALKANOLS) AND THEIR USE AS SURFACTANTS

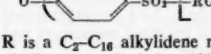
Richard P. Crowley, Wellesley, Mass. (125 High St., Boston, Mass. 02110)

No Drawing. Filed May 24, 1972, Ser. No. 256,280

Int. Cl. C07c *147/06, 147/10*

U.S. Cl. 260—607 A 5 Claims

An oxybis(benzenesulfonyl polyether) compound represented by the formula:



wherein R is a C_2–C_{16} alkylidene radical, R' is a halide radical or hydrogen, and n is 2 to 100.

3,829,501

POLYETHERPOLYTHIOLS, METHOD OF PREPARATION AND MIXTURES OF POLYTHIOETHER-POLYTHIOLS WITH EPOXIDE RESINS

Richard A. Hickner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 771,648, Oct. 29, 1968. This application Aug. 12, 1971, Ser. No. 171,333

Int. Cl. C07c *149/00*

U.S. Cl. 260—609 D 36 Claims

Polythioetherpolythiols with a thiol functionality greater than 2 are made by reacting a polythiol with a triene, a tetraene or mixtures thereof or mixtures of the polyenes with a diene, in the presence of a free radical generating catalysts. The polythioetherpolythiols can be reacted with epoxide resins to effect cures of the latter.

3,829,502

PROCESS FOR THE PREPARATION OF HYDROXY-HYDROPEROXIDES FROM OLEFINS

Anna Maria Mattucci, Turin, and Emilio Perrotti, San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato Milanese, Italy

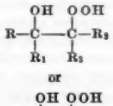
No Drawing. Filed Sept. 5, 1969, Ser. No. 855,738

Claims priority, application Italy, Sept. 5, 1968, 20,873/68, Patent 843,594

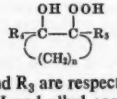
Int. Cl. C07c *73/06*

U.S. Cl. 260—610 R 6 Claims

A β-hydroxy-hydroperoxide represented by the formula:



or



wherein: R, R_1, R_2 and R_3 are respectively members of the group consisting of H and alkyl containing from 1 to 18 carbon atoms, provided their total number of carbon atoms does not exceed 18, R_4 and R_5 are respectively members of the group consisting of H and alkyl containing from 1 to 17 carbon atoms, provided their total number of carbon atoms does not exceed 17, and n is an integer from 1 to 18, and a process for preparing that compound, are disclosed.

3,829,503

PROCESS FOR PRODUCING ORGANIC PEROXIDES

Mitsukuni Kato, Yokohama, and Takeshi Komai and Kazuyoshi Aoshima, Taketoyo-machi, Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan

No Drawing. Filed July 20, 1970, Ser. No. 56,711

Claims priority, application Japan, July 19, 1969, 44/56,755

Int. Cl. C07c *73/00*

U.S. Cl. 260—610 R **6 Claims**

An aromatic group-containing tertiary peroxide can be produced by reacting an aromatic group-containing tertiary hydrocarbon halide with a tertiary hydroperoxide under a reduced pressure or in the presence of a tertiary alkanol or an alkene olefin. Said tertiary peroxide is useful as a radical initiator for vinyl monomers and a cross-linking agent for pololefins.

3,829,504

NOVEL DI-LOWER ALKYL AND LOWER ALKYLENE ACETALS OF 2- AND 3-PHENYL-PENTENALS

John B. Hall, Rumson, and Manfred Vock, West Orange, N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 43,555, June 4, 1970, now Patent No. 3,694,232. This application Aug. 1, 1972, Ser. No. 276,923

Int. Cl. C07c *41/10, 43/30*

U.S. Cl. 260—611 **4 Claims**

Novel di-lower alkyl or lower alkylene acetals of 2- and 3-phenyl-pentenals useful in altering the aroma and/or organoleptic characteristics of foodstuff, foodstuff flavor and aroma, tobacco, tobacco flavor and aroma, perfume and perfumed compositions, and methods for preparing said acetals.

3,829,505

POLYETHERS AND METHOD FOR MAKING THE SAME

Robert Johnston Herold, Akron, Ohio, assignor to The General Tire & Rubber Company

No Drawing. Continuation of application Ser. No. 13,773, Feb. 24, 1970, which is a continuation-in-part of application Ser. No. 479,333, Aug. 12, 1965, both now abandoned. This application July 7, 1972, Ser. No. 269,631

Int. Cl. C07c *41/00*

U.S. Cl. 260—611 B **6 Claims**

Hydroxy terminated polyethers are obtained by reacting (1) epoxide and oxetane monomers with (2) a telogen at least partially soluble with the monomers, reactive with said monomers and being selected from the group consisting of organic hydroxy containing compounds, sulfhydryl containing compounds, aldehydes and ketones, such as methanol, hexanedione-2,5, acetone, ethylene glycol, trimethylol propane, etc., using (3) in admixture therewith as catalysts certain double metal cyanide complexes which preferably had been treated with organic materials like alcohols, ethers, esters and so forth. A feature of the process of the present invention is the preparation of high molecular weight diols, triols, etc. without appreciable end group unsaturation, and the use of certain solvents with particular monomers and catalysts to also achieve these results.

The products of the present process are useful as nonionic surface active agents, as lubricants and coolants, as textile sizes, as films for packaging and in the preparation of solid or flexible polyurethanes by reaction with polyisocyanates.

3,829,506

BIODEGRADABLE SURFACE ACTIVE AGENTS HAVING GOOD FOAM PROPERTIES AND FOAM STABILIZING CHARACTERISTICS

Irving R. Schmolka, Grosse Ile, and Reinhold K. Seizinger, Trenton, Mich., assignors to BASF Wyandotte, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 148,976, June 1, 1971, which is a continuation-in-part of application Ser. No. 845,516, July 28, 1969, both now abandoned. This application Nov. 7, 1972, Ser. No. 304,526

Int. Cl. C07c *43/04*

U.S. Cl. 260—615 B **6 Claims**

Heteric polyether polyols are prepared by the copolymerization of low molecular weight alkylene oxides and α-olefin oxides containing from ten to twenty carbon atoms with low molecular weight active hydrogen-containing compounds.

3,829,507

DI-TRIMETHYLOLPROPANE

Edward Gustave Zey, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 16, 1971, Ser. No. 124,688

Int. Cl. C07c *43/00, 41/12*

U.S. Cl. 260—615 R **3 Claims**

Production of di-trimethylolpropane and recovery thereof in significant quantities; further, in the production of trimethylolpropane the improvement comprising recovering from the reaction mixture di-trimethylolpropane in crystalline form.

3,829,508

HALOGENOALKYL-POLYGLYCOL ETHERS AND PROCESS FOR PREPARING THEM

Helmut Diery, Kelkheim, Taunus, and Lorenz Heiss, Hofheim, Taunus, Germany (both % Farbwerke Hoechst AG, Frankfurt am Main, Germany)

No Drawing. Continuation of abandoned application Ser. No. 841,620, July 14, 1969. This application Mar. 30, 1972, Ser. No. 239,822

Int. Cl. C07c *43/00, 43/12*

U.S. Cl. 260—615 B **3 Claims**

Compounds of the general formula

$$R_1\text{—}\underset{\displaystyle X}{\underset{|}{C}}HCH_2CH_2\text{—}O(C_nH_{2n}O)_m\text{—}R_2$$

wherein R_1 stands for alkyl containing 4 to 20 carbon atoms, X stands for chlorine or bromine, R_2 stands for alkyl containing 1 to 20 carbon atoms, a radical of an alkane-carboxylic acid containing 1 to 18 carbon atoms, the phenyl radical, the naphthyl radical or an alkyl-phenyl radical containing 1 to 12 aliphatic carbon atoms, the benzoyl or benzyl radical or the radical

$$R_1\underset{\displaystyle X}{\underset{|}{C}}HCH_2CH_2\text{—}$$

n stands for an integer from 2 to 4 and *m* stands for an integer from 2 to 200, which are useful as tensides and emulsifiers, and a process for preparing them by reacting a halogeno-methyl ether of the formula

$$R_3O(C_nH_{2n}O)_m\text{—}CH_2X$$

in which X, *n* and *m* have the meanings given above, and R_3 stands for the radical $—CH_2Cl$ or $—CH_2Br$ or has the same meaning as R_2, in the presence of a Friedel-Crafts catalyst, at 10 to 100° C., with an α-olefin containing 8 to 20 carbon atoms.

3,829,509

PROCESS FOR THE TREATMENT OF AQUEOUS SOLUTIONS OF PHENOL AND HYDROGEN CHLORIDE

Ernest Charles, Paris, Jean-Claude Leroi, Villeurbanne, and Michel Pech, Pont-de-Claix, France, assignors to Progil, Paris, France

Filed Nov. 24, 1969, Ser. No. 879,363

Claims priority, application France, Nov. 27, 1968, 50,684

Int. Cl. C07c *37/38*

U.S. Cl. 260—621 A **3 Claims**

A single stage separation of phenol and hydrogen chloride from a conjoint solution in water by distilling in the presence of calcium chloride or magnesium chloride so as to remove the hydrogen chloride and the phenol from the solution and cooling the resulting vapors to separate the hydrogen chloride in the gaseous state and the phenol in the liquid state.

3,829,510

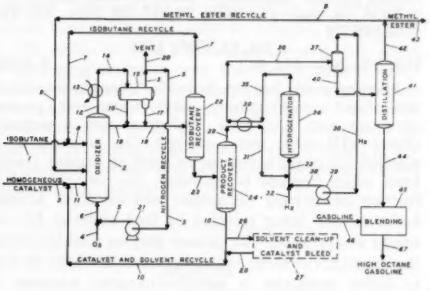
ISOBUTANE OXIDATION TO PRODUCE ALCOHOL USEFUL IN MOTOR FUEL

Robert T. Adams, Lafayette, William A. Heath, Sausalito, and Richard A. Wuopio, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed June 25, 1971, Ser. No. 163,515

Int. Cl. C07c *27/12, 31/02*

U.S. Cl. 260—632 C **7 Claims**



A process for producing high-octane lead-free or low-lead content gasoline which comprises:

(a) oxidizing isobutane in an oxidation zone by contacting the isobutane in liquid phase with gaseous oxygen, and recycled methyl ester, and an added homogeneous catalyst in an organic acid solvent, to obtain a product comprising a mixture of t-butyl alcohol, acetone, methanol, and methyl ester;

(b) passing at least a portion of the mixture to a hydrogenation zone and hydrogenating the acetone to obtain a mixture comprising t-butyl alcohol, isopropyl alcohol, methanol, and methyl ester;

(c) separating at least methyl ester from the t-butyl alcohol, isopropyl alcohol, and methanol;

(d) recycling the methyl ester to the oxidation zone.

3,829,511

PROCESS FOR SEPARATING PERFLUOROALKYLIODIDE TELOMERS

Werner Rudolph, Anderten, Hannover, and Joachim Massonne, Hannover, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,838

Claims priority, application Germany, Nov. 7, 1970, P 20 54 922.8

Int. Cl. C07c *19/08*

U.S. Cl. 260—653.1 T **4 Claims**

Perfluoroalkyliodide telomers of a chain length of up to 14 carbon atoms are separated and recovered from a mixture of such telomers of a chain length of about 4 to above 20 carbon atoms by adding to the said mixture at a temperature between −10 and +40° C. a solvent selected from the group consisting of aliphatic and cycloaliphatic perhalogeno hydrocarbons of 1–4 carbon atoms and of a boiling point between −10 and 55° C. so as to bring the perfluoroalkyliodide telomers of a chain length up to 14 carbon atoms into solution, then separating the thus-obtained solution from the solid perfluoroalkyliodide telomers of more than 14 carbon atoms and recovering the desired perfluoroalkyliodide telomers by distilling off the solvent.

3,829,512

PROCESS FOR THE PREPARATION OF PENTAFLUORETHYL IODIDE AND HEPTAFLUORISOPROPYL IODIDE

Hans Millauer, Niederhochstadt, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

No Drawing. Filed Aug. 8, 1972, Ser. No. 278,878

Claims priority, application Germany, Aug. 10, 1971, P 21 39 964.4

Int. Cl. C07c *17/08, 19/08*

U.S. Cl. 260—653.6 **4 Claims**

A process for the preparation of pentafluorethyl iodide and heptafluoroisopropyl iodide by reacting perfluorinated olefins of the formula $R_F—CF=CF_2$ wherein R_F is fluorine or CF_3, with iodine and gaseous HF in the presence of antimony halides and sulfuryl chloride and/or chlorine.

The compounds are used as telogens for the telomerization of tetrafluorethylene to long-chain perfluoralkyl iodides.

3,829,513

CONVERSION OF GEM-DIFLUORO COMPOUNDS TO FLUOROALKENES AND FLUOROALKAPOLYENES

Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Application Dec. 30, 1968, Ser. No. 788,000, now Patent No. 3,624,167, which is a division of application Ser. No. 439,475, Mar. 12, 1965, now Patent No. 3,432,441. Divided and this application Oct. 4, 1971, Ser. No. 186,454

Int. Cl. C07c *17/34, 19/08, 21/18*

U.S. Cl. 260—653.5 **5 Claims**

Gem difluoro compounds are converted to fluoroalkenes, fluoroalkadienes, or fluoroalkatrienes by contacting said gem-difluoro compounds with a catalyst formed by treating a finely divided alumina with a liquid solution of am-

monium fluoride, ammonium bifluoride, or hydrogen fluoride, thereafter draining said solution from said alumina, repeating the treating and draining steps, and thereafter heating the impregnated catalyst to a temperature in the range of 300 to 1000° F. for a period of time in the range of 2 to 24 hours.

3,829,514

PRODUCTION OF CYCLOALKYLAROMATICS

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 21, 1973, Ser. No. 334,386

Int. Cl. C07c *15/12*

U.S. Cl. 260—668 R **7 Claims**

Cycloalkylaromatics are produced from aromatic hydrocarbons in the presence of hydrogen and an aqueous HF-treated ruthenium halide-active clay catalyst which has been promoted with at least one compound of iron, cobalt, and nickel. Preferably the catalyst has not been heated under calcination conditions prior to use. In a specific embodiment, benzene is converted to cyclohexylbenzene with good selectivity over an active clay impregnated with ruthenium chloride and hydrogen fluoride and at least one compound of iron, cobalt, and nickel.

3,829,515

PRODUCTION OF CYCLOALKYLAROMATICS

Ernest A. Zuech, Marvin M. Johnson, and Gerhard P. Nowack, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Feb. 21, 1973, Ser. No. 334,387

Int. Cl. C07c *15/12*

U.S. Cl. 260—668 R **11 Claims**

Cycloalkylaromatics are produced from aromatic hydrocarbons in the presence of hydrogen and a ruthenium halide-active clay catalyst promoted with at least one compound of iron, cobalt and nickel. Preferably, the catalyst is not heated under calcination conditions prior to use. In a specific embodiment, benzene is converted to cyclohexylbenzene with good selectivity over an active clay impregnated with ruthenium chloride promoted with at least one compound of iron, cobalt and nickel followed by solvent removal under conditions which do not result in calcination of the catalyst composition.

3,829,516

PRODUCTION OF CYCLOALKYLAROMATICS

Ernest A. Zuech and Marvin M. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Feb. 21, 1973, Ser. No. 334,388

Int. Cl. C07c *15/12*

U.S. Cl. 260—668 R **5 Claims**

Cycloalkylaromatics are produced from aromatic hydrocarbons in the presence of hydrogen and a rhodium-active clay catalyst. Preferably the catalyst has not been heated under calcination conditions prior to use. In a specific embodiment, benzene is converted to cyclohexylbenzene with good selectivity over an active clay impregnated with rhodium trichloride wherein the solvent has been removed under conditions which do not subject the catalyst composition to calcination temperature.

3,829,517

PRODUCTION OF CYCLOALKYLAROMATICS

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Feb. 21, 1973, Ser. No. 334,389

Int. Cl. C07c *15/12*

U.S. Cl. 260—668 R **8 Claims**

Cycloalkylaromatics are produced from aromatic hydrocarbons in the presence of hydrogen and a ruthenium halide-active clay catalyst which has not been heated under calcination conditions prior to use. Benzene is converted to cyclohexylbenzene in good selectivity over a montmorillonite active clay impregnated with a solution of ruthenium chloride and removal of solvent by heating without calcination at temperatures not exceeding about 380° C. Calcination of the support before impregnation or calcination of the impregnated support results in lower selectivity in the conversion process.

3,829,518

PROCESS FOR PRODUCTION OF POLYARYLENES

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 858,867, Sept. 17, 1969. This application June 21, 1972, Ser. No. 264,846

Int. Cl. C07c *15/12*

U.S. Cl. 260—670 **30 Claims**

Polyarylenes, i.e., polymers of aromatic compounds, can be produced by the dehydrogenative coupling of partially hydrogenated aromatics over a catalyst, in the presence of hydrogen, at elevated temperatures and pressures. The polyarylenes can also be produced from aromatic compounds by subjecting the aromatics to controlled partial hydrogenation as well as the dehydrogenative coupling. The polyarylenes produced by this process are soluble to an extent unknown heretofore in the art and possess thermal properties which renders them useful in high temperature applications such as ablative materials.

3,829,519

PRODUCTION OF BENZENE

Roy John Sampson and Christopher Buxton Spencer, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 5, 1971, Ser. No. 104,162

Claims priority, application Great Britain, Jan. 9, 1970, 1,138/70; July 27, 1970, 36,197/70; Nov. 18, 1970, 54,866/70

Int. Cl. C07c *3/58*

U.S. Cl. 260—672 R **9 Claims**

Alkyl aromatic hydrocarbons, for example toluene, are dealkylated to yield benzene and hydrogen in the presence of steam and, optionally, hydrogen over a supported Group VIII noble metal catalyst. The products of the reaction are phase separated to yield an organic fraction from which benzene is separated, the remainder of the fraction comprising unchanged and/or other aromatic hydrocarbons being recycled as feed material for continued dealkylation. The process may be used to increase the aromatics content and to increase the ratio of lower to higher aromatics in paraffin-aromatics mixtures, for example the hydrocarbon mixture obtained by reforming.

3,829,520

INHIBITION OF OLEFIN ISOMERIZATION AND REVERSE DISPLACEMENT IN CATALYTIC DISPLACEMENT REACTIONS

Ralph T. Ferrell, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed May 15, 1972, Ser. No. 253,209

Int. Cl. C07c *11/24*

U.S. Cl. 260—677 **9 Claims**

Isomerization and reverse displacement reactions are inhibited in producing α-olefins by catalytic displacement

from aluminum alkyl growth product using carbon monoxide. Briefly, carbon monoxide is injected into the displacement reaction product mixture prior to separation of the aluminum alkyls.

3,829,521

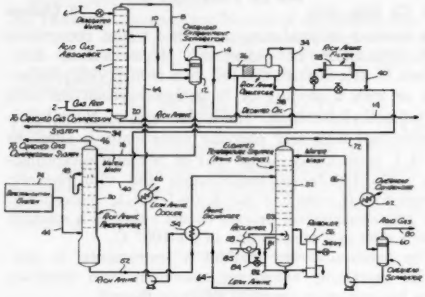
PROCESS FOR REMOVING ACID GASES FROM A GAS STREAM

Ellis J. Green, Winchester, Mass., assignor to Stone & Webster Engineering Corporation, Boston, Mass.

Filed July 3, 1972, Ser. No. 268,650

Int. Cl. C07c *7/00*

U.S. Cl. 260—677 A **15 Claims**



Process and system for removing acid gases from a gas stream by absorption in aqueous amine solution and process and system for regenerating the amine. Acid gases, specifically H_2S and CO_2, in the cracked gases from a pyrolysis furnace are absorbed by aqueous amine solution. The amine solution is then regenerated by coalescing and separating liquid C_4 and heavier hydrocarbons entrained in the amine solution, filtering from the amine solution solid particles if present, stripping from the amine solution almost all of the C_4 and heavier unsaturated hydrocarbons remaining therein, and finally stripping at elevated temperatures the acid gases from the amine solution by conventional means.

3,829,522

SYNTHESIS OF ALKYNES BY DEHYDROHALOGENATION

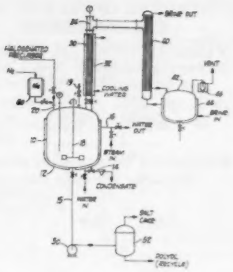
Charles A. Schneider, Villa Hills, Ky., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Oct. 21, 1971, Ser. No. 191,442

Int. Cl. C07c *11/22*

U.S. Cl. 260—678 **14 Claims**

A process for preparing alkynes of high purity by dehydrohalogenation. Halogenated precursors consisting of dihaloalkanes and monohaloalkenes are reacted with a partial alcoholate of an alkali metal and an aliphatic polyol. The reaction mixture remains fluid during the process. Alkynes and volatile by-products are evaporated from the reaction mixture and partially condensed in a separation column to recover the high-purity alkyne product. The volatile by-products are returned to the reaction mixture as a condensed liquid. The alkyne products are obtained in high yield.



3,829,523

OLEFIN DISPROPORTIONATION

David M. Singleton, Richmond, Calif., assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed July 22, 1969, Ser. No. 843,764

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **2 Claims**

Olefins are disproportionated with a catalyst produced by contacting (a) molybdenum or tungsten oxide supported on an inorganic oxide solid and (b) an alkyl aluminum halide.

3,829,524

DEHYDROGENATION PROCESS FOR CONVERTING n-PARAFFIN HYDROCARBON INTO n-OLEFIN HYDROCARBON

Charles A. Senn III, Greenville, S.C., and Levi C. Parker, Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.

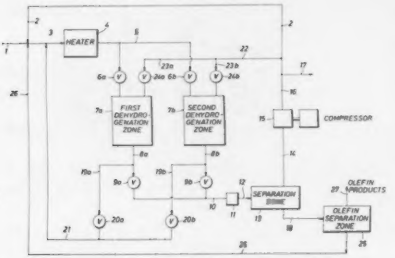
Continuation-in-part of application Ser. No. 213,558, Dec. 29, 1971. This application July 11, 1973, Ser. No. 378,298

Int. Cl. C07c *3/28, 5/18*

U.S. Cl. 260—683.3 **9 Claims**

A dehydrogenation process wherein n-paraffin hydrocarbon at an elevated temperature, in the presence of molecular hydrogen is contacted with a dehydrogenation catalyst comprising a dehydrogenation component supported upon an inorganic metal oxide base to convert said n-paraffin hydrocarbon into n-olefin hydrocarbon. Such process incorporates an improvement for increasing the selectivity of said catalyst for converting n-paraffin hydrocarbon into n-olefin hydrocarbon, which improvement comprises treating a fresh or freshly regenerated dehydrogenation catalyst, prior to use in the dehydrogenation reaction, with paraffin hydrocarbon and hydrogen in a mole ratio of hydrogen to hydrocarbon of from about

0.5:1 to about 40:1, at a temperature of from about 750° F. to about 1000° F., and a pressure of from about



atmospheric to about 50 p.s.i.g. for a period of from about 12 to about 24 hours.

3,829,525

CATALYST COMPOSITION AND ISOPARAFFINIC-OLEFIN ALKYLATION UTILIZING STRONG ACID WITH A SULFONAMIDE

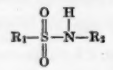
Edward L. Cole, Fishkill, and Frederic C. McCoy, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 14, 1973, Ser. No. 359,941

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.63 **16 Claims**

An alkylation aid of the formula



wherein R_1 is selected from the group alkyl, aryl and alkyl aromatic; and wherein R_2 is alkyl having from about 9 to 20 carbon atoms, for use in strong acid catalyzed reactions wherein alkylatable hydrocarbons are alkylated with alkylating agents. Also, alkylation processes employing such alkylation aids.

3,829,526

HYDROGENATED POLYPHENOLS AS SULFUR SOLUBILIZERS IN POLYTHIOL SEALANTS

Richard C. Doss and Moses L. Thomas, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 20, 1973, Ser. No. 346,830

Int. Cl. C08g *17/04, 51/28*

U.S. Cl. 260—75 S **11 Claims**

Sealant and coating formulations are prepared by curing a mixture comprising (a) a polymercaptan terminated polymer such as a poly(oxyalkylene)-polyester-poly(monosulfide)-polythiol having an average of more than two mercapto groups per molecule, (b) a hydrogenated polyphenyl containing dissolved sulfur, and (c) a curing agent.

3,829,527

ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANES

Guenther Fritz Lengnick, Adrian, Mich., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 270,354, July 10, 1972. This application June 8, 1973, Ser. No. 368,410

Int. Cl. C08f *35/02*

U.S. Cl. 260—827 **11 Claims**

The invention relates to novel cross-linking agents and to curable one-component organopolysiloxanes which are obtained from the reaction of hydroxyl-terminated organopolysiloxanes and the novel disilane cross-linking agents having functional groups which are hydrolyzable at ambient moisture.

3,829,528

METHOD OF PRODUCING RESORCINOL RESINS BY REACTING WITH N-METHYLOL CAPROLACTAM

Agu Yanovich Aarna, Karl Ritsovich Kiisler, Peep Gerkhardovich Kristyanson, and Juri Albert-Mikhaelovich Tanner, Tallin, U.S.S.R., assignors to Tallinsky Politekhnichesky Institut, Tallin, U.S.S.R.

No Drawing. Continuation of abandoned application Ser. No. 131,790, Apr. 6, 1971. This application Apr. 30, 1973, Ser. No. 355,966

Int. Cl. C08g *5/10*

U.S. Cl. 260—841 **8 Claims**

A method of producing resorcinol resins, comprising polycondensation of resorcinol, alkylresorcinol compounds or of a mixture thereof, with N-methylolcaprolactam or with a mixture of N-methylolcaprolactam with N,N-dimethylcarbamide. The molar ratio of N-methylolcaprolactam with said phenolic compounds is equal to 0.3–1:1, respectively, while that of N-methylolcaprolactam with N,N-dimethylolcarbamide and with phenolic compounds is equal to 0.1–0.4:0.1–0.4:1, respectively. The polycondensation process occurs either in a solution or in a melt at a temperature of 30–100° C.

The herein-disclosed method is instrumental in producing practically anhydrous resorcinol resin featuring more homogeneous chemical structure thereof.

3,829,529

ROOM-TEMPERATURE CURING ORGANOPOLYSILOXANES

Guenther Fritz Lengnick, Manitou Beach, Mich., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 214,430, Dec. 30, 1971. This application May 29, 1973, Ser. No. 364,457

Int. Cl. C08f *35/02*

U.S. Cl. 260—827 **9 Claims**

The invention relates to silane cross-linking agents having different hydrolyzable groups on the silane molecule and to curable one-component modified organopolysiloxane compositions obtained from the reaction of these cross-linking agents with hydroxyl-terminated organopolysiloxanes.

3,829,530

OILLESS ALKYDS

Thomas Michael Powanda, Middlesex, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 56,232, July 15, 1970. This application Apr. 14, 1972, Ser. No. 244,308

Int. Cl. C08g *37/34, 17/04*

U.S. Cl. 260—850 **4 Claims**

An oilless alkyd capable of providing superior coatings containing an interpolymer of a polyol having 3 to 4 hydroxyl functional groups, an aliphatic diol having 5 to 7 carbon atoms and a phthalic anhydride component.

3,829,531

ADDITIVE FOR IMPACT MODIFIED THERMOPLASTICS

Robert Martin Graff, Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Jan. 8, 1973, Ser. No. 321,600

Int. Cl. C08g 41/04

U.S. Cl. 260—859 12 Claims

Thermoplastic articles having greatly reduced susceptibility to hazing are prepared from a solution of a polyurethane impact modifier in an α,β-unsaturated monomer comprising methyl methacrylate, and a haze modifier copolymer.

3,829,532

FLAME-RESISTANT POLYESTER COMPOSITION

Gilbert K. Meloy, Chagrin Falls, and Diane G. Farrington, Euclid, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 172,892, Aug. 18, 1971, which is a continuation-in-part of application Ser. No. 822,023, May 5, 1969, both now abandoned. This application Apr. 20, 1973, Ser. No. 352,910

Int. Cl. C08g 17/10, 17/12

U.S. Cl. 260—864 7 Claims

Thermosetting compositions and cured articles therefrom having markedly enhanced flame resistance are composed of a halogen-containing polyester-monomer mixture in which are included certain amino triazines, amides or amidines.

3,829,533

POLYURETHANE ADHESIVES BASED ON ω,ω'-DIISOCYANATE DIMETHYLCYCLOHEXANE

Yutaka Matsui, Ashiya, Seiji Kazama, Kawanishi, and Masamitsu Nakabayashi, Ibaraki, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Mar. 31, 1972, Ser. No. 240,288

Claims priority, application Japan, Apr. 3, 1971, 46/20,571; Apr. 14, 1971, 46/23,689

Int. Cl. C08g 41/00, 22/24

U.S. Cl. 260—858 17 Claims

This invention relates to an adhesive composition which is especially suitable for bonding polyesters or polyolefines to each other or to other substrates, which composition comprises (A) a linear high molecular polyurethane prepared by reacting a diol having a molecular weight of from about 500 to about 3,000 with ω,ω'-diisocyanato dimethylcyclohexane in amounts such as to provide a ratio of NCO/OH of around 1, and (B) about 1–10 parts by weight of ω,ω'-diisocyanato dimethylcyclohexane or its NCO-terminated prepolymer prepared by reacting a low molecular diol or polyol having a molecular weight of not higher than about 400 and having at least 2 hydroxyl groups per molecule with an excess amount of ω,ω'-diisocyanato dimethylcyclohexane. Another variation of the present invention is the use of an adhesive composition made up of (C) a hydroxyl-terminated polyurethane prepolymer prepared by reacting a diol having a molecular weight of from about 500 to about 3,000 with ω,ω'-diisocyanato dimethylcyclohexane in amounts such that the ratio of NCO/OH is slightly higher than 1, to give an NCO-terminated prepolymer, and then reacting the resultant NCO-terminated prepolymer with a low molecular polyol having at least 3-hydroxyl groups per molecule in such an amount that the ratio of NCO/OH is about 3 to about 10, and (D) an NCO-terminated prepolymer prepared by reacting a low molecular diol or polyol having a molecular weight of not higher than about 400 and having at least 2 hydroxyl groups per molecule with an excess amount of ω,ω'-diisocyanato dimethylcyclohexane.

3,829,534

PROCESS FOR PREPARING KETO-CONTAINING PHOSPHONATES

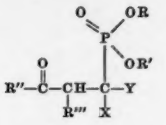
Joseph John Dickert, Jr., Lower Makefield Township, Pa., and Albert Lloyd Williams, Hopewell Township, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed July 3, 1972, Ser. No. 268,391

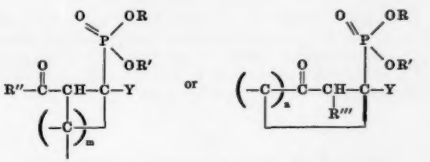
Int. Cl. C07f 9/38; C10m 1/46

U.S. Cl. 260—970 6 Claims

Novel compounds having utility as anti-wear agents for industrial compositions have the structure:



wherein R and R′ may be hydrocarbyl, substituted hydrocarbyl, heterocyclic or members of the same cyclic hydrocarbyl group; R″, R‴ and X may each be hydrocarbyl or substituted hydrocarbyl, and R‴ and X may be hydrogen as well, and either R″ or R‴ may be linked to X through one or more carbon atoms as follows:



integers m and n being at least 2 and 1, respectively, the dangling valences being attached to hydrogen or hydrocarbyl groups; and Y may be hydrogen or alkyl of from 1 to about 16 carbon atoms. These compounds may be prepared by novel reaction between a 2-olefin-1-one and an organo hydrogen phosphite.

3,829,535

PREPARATION OF S-2-HYDROCARBYLTHIOALKYL ESTERS OF THIOPHOSPHORUS ACIDS

Wolfgang H. Mueller, Elizabeth, Warren A. Thaler, Matawan, and Alexis A. Oswald, Mountainside, N.J., assignors to Esso Research and Engineering Company

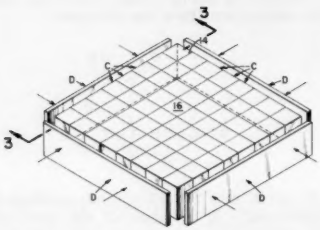
No Drawing. Original application Mar. 4, 1969, Ser. No. 805,115, now Patent No. 3,660,543. Divided and this application Feb. 10, 1972, Ser. No. 225,335

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—979 7 Claims

Neutral S-2-hydrocarbylthioalkyl esters of thiophosphorus acids are prepared through the displacement reaction of a 2-hydrocarbyl-2-hydrocarbylthioethyl halide alone or in admixture with the corresponding isomeric secondary halide compound with a diorgano thiophosphate, thiophosphonate or thiophosphinate salt. The displacement reactions are conducted at moderate temperatures and pressures, preferably in the presence of a polar diluent. The preferred thiophosphorus acid salt reactants are salts of dialkyl dithiophosphoric acids and dialkyl monothiophosphoric acids. The preferred halide reactants are 2-alkyl-2-alkylthioethyl chlorides alone or in combination with 1-alkyl-2-alkylthioethyl chlorides. The compounds derived from the displacement reactions possess particularly good pesticidal activity.

3,829,536
METHOD OF FORMING AN OPTICAL ELEMENT OF REDUCED THICKNESS
Luis W. Alvarez, Berkeley, Calif., assignor to Humphrey Research Associates, Oakland, Calif.
Division of Ser. No. 131,156, April 5, 1971, Pat. No. 3,739,455. This application Apr. 30, 1973, Ser. No. 355,624
Int. Cl. B23p 17/00
U.S. Cl. 264—1 5 Claims



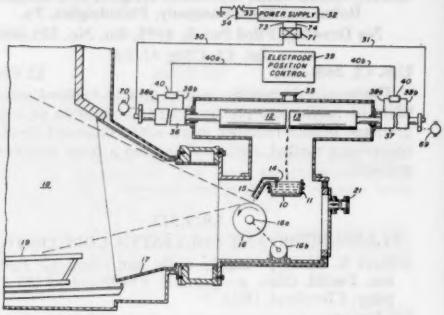
An optical element of reduced thickness is formed by a mosaic of discrete lens faces, the lens faces together deflecting light in a manner equivalent to a conventional optical element of much greater thickness. Process and apparatus for the production of the lens element is included.

3,829,537
METHOD OF MAKING SPONGE PROPELLANT
Henry Rosenthal, 132 Carpenter Ave., Crestwood, Tuckahoe, N.Y.
Division of Ser. No. 352,311, April 30, 1953, which is a continuation-in-part of Ser. No. 57,284, Oct. 29, 1948, abandoned. This application Aug. 27, 1954, Ser. No. 452,743
Int. Cl. C06b 21/02
U.S. Cl. 264—3 R 3 Claims

1. A method of forming a shaped, propellant charge having a sponge-like cellular structure which comprises incorporating in a colloided nitrocellulose composition a solvent for an inert gas, placing the said composition in a suitable mold, subjecting said composition to an atmosphere of inert gas at elevated pressures and to heat not exceeding 60°C, and then releasing the gaseous pressure whereby the explosive composition is expanded to form a unitary, spongy structure substantially in the form of the mold.

3,829,538
CONTROL METHOD AND APPARATUS FOR THE PRODUCTION OF POWDER METAL
Falih N. Darmara, and I. Dwight Clark, both of New Hartford, N.Y., assignors to Special Metals Corporation, New Hartford, N.Y.
Filed Oct. 3, 1972, Ser. No. 294,747
Int. Cl. B22d 23/08
U.S. Cl. 264—8 11 Claims

Control of the process for producing pre-alloyed metallic powder by controlling the melting rate of at least one consumable electrode formed from an ingot of the metal to be ultimately atomized, to produce a controllable continuous flow of metal for atomization into powder. After striking an arc for melting the electrode which is located in a chamber containing a protective atmosphere, the power input to the electrode is selectively adjusted during continual melting to control the melting rate to equal the optimum rate of atomization. The liquid metal droplets from the electrode are collected in a preheated holding reservoir to provide a homogeneous stream of

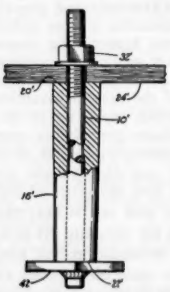


metal which is delivered to a disintegrator. This produces an atomized liquid metal which solidifies into a powdered form and is collected.

3,829,539
NOVEL PROCESS FOR PREPARATION OF SILVER CHLORIDE POWDER
Ivan C. Blake, Westerly, R.I., and Ronald Cercone, Pawcatuck, Conn., assignors to Yardney International Corp., Pawcatuck, Conn.
Filed Dec. 7, 1972, Ser. No. 312,958
Int. Cl. B22d 23/08
U.S. Cl. 264—13 5 Claims

Improvements are provided in a process for preparing silver chloride which process includes heating metallic silver to above the melting point of silver chloride but below the melting point of silver and introducing chlorine gas above the heated solid silver while withdrawing molten silver chloride from contact with the heated silver. The improvements comprise heating the withdrawn silver chloride to at least about 1100°F but below the decomposition point thereof and when passing the heated liquid silver chloride into water, recovering the resulting brittle silver chloride flakes and disintegrating the flakes to granular form.

3,829,540
TECHNIQUE FOR ALIGNING ANCHOR BOLTS
Joseph F. Cox, 73 Everett St., Arlington, Mass.
Filed Dec. 7, 1970, Ser. No. 95,489
Int. Cl. E04b 1/38; E02d 27/32
U.S. Cl. 264—34 10 Claims



An improved anchor bolt shield is used to provide a yieldable, deformable annular sleeve about the upper portion of an

anchor bolt when the lower end of the bolt is embedded in a concrete foundation. The relatively deformable charcteristics of the sleeve permit the upper, threaded end of the bolt to be adjusted laterally to facilitate alignment of the upper end of the bolt with a receptive hole in a member intended to be secured to the foundation. In one aspect of the invention the sleeve remains in place while in another aspect of the invention the sleeve may be removed and the annular void about the anchor bolt may be filled with an appropriate material.

3,829,541

DIRECT BONDED REFRACTORY BRICKS

Grant M. Farrington, Jr., Marlton, N.J., and Walter S. Treffner, Linthicum Heights, Md., assignors to General Refractories Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 825,046, May 15, 1969, abandoned. This application Apr. 19, 1972, Ser. No. 245,637

Int. Cl. F27b *9/10*

U.S. Cl. 264—65 **11 Claims**

Disclosed herein is a process for the preparation of direct bonded refractory bricks. This process comprises firing a pressed refractory composition of magnesite and chrome ore while maintaining the iron oxides ordinarily present in the chrome ore in their divalent state during the heating stage.

3,829,542

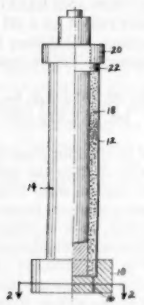
METHOD OF MANUFACTURING A POROUS ARTICLE

Oscar Chilesotti De Romano, Le Roqueville, 20 Bd. Princesse Charlotte, Monte-Carlo, Monaco

Filed July 27, 1972, Ser. No. 275,865

Int. Cl. B29b *1/00, 3/04*

U.S. Cl. 264—71 **11 Claims**



A method of manufacturing a porous article and an article produced thereby in which a plurality of polymeric particles are coated with a plasticizer placed in a mold to which is added an amount of an organic solvent sufficient to dissolve a surface portion of each of the particles so that the abutting particles stick together. The solvent and plasticizer may then be completely vaporized so that the substantially dissolved surface portions will once again assume a solid state and form a porous unitary structure corresponding to the shape of the mold. According to a preferred embodiment, the particles are preferably dried before they are subjected to the solvent and plasticizer treatment. Any residual amount of plasticizer remaining in the molded product will impart its stated effect to the molded article but its main function to delay the action of the solvent on the particles in the upper portion of the mold until the solvent has contacted the particles in the lower portion of the mold.

3,829,543

MELT SPINNING OF POLYMERS

William Neil Robertson, Harrogate, England, assignor to Imperial Chemical Industries Limited, Millbank, London, Great Britain

Filed July 14, 1972, Ser. No. 271,949

Int. Cl. D01f *1/04*

U.S. Cl. 264—78 **4 Claims**

Manufacture of at least two filaments or groups of filaments by melt-spinning thermoplastic polymer with incorporation of different colouring material wherein molecular weight is adjusted additively to reduction caused by colouring material to give same molecular weight of polymer in filaments.

3,829,544

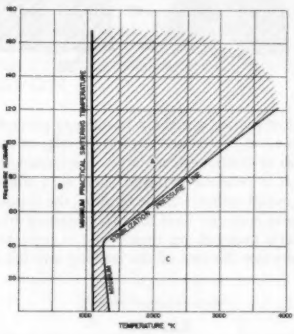
METHOD OF MAKING A UNITARY POLYCRYSTALLINE DIAMOND COMPOSITE AND DIAMOND COMPOSITE PRODUCED THEREBY

Howard T. Hall, Provo, Utah, assignor to Megadiamond Corporation, Provo, Utah

Continuation of Ser. No. 96,312, Dec. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 784,788, Dec. 19, 1968, abandoned. This application Apr. 2, 1973, Ser. No. 346,781

Int. Cl. B29f *5/00*

U.S. Cl. 264—125 **2 Claims**



A method of making unitary polycrystalline diamond composite by sintering a body of diamond particles at a temperature between about 100°–3900 °K and at a pressure ranging up to about 170 kilobars depending on the temperature.

3,829,545

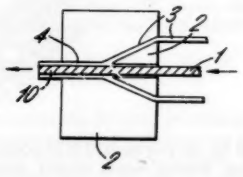
PROCESS FOR MANUFACTURING POLYETHYLENE TEREPHTHALATE PLASTIC COATED WIRE

Roger Van Vlaenderen, Zwevegem, Belgium, assignor to N. V. Bekaert S.A., Zwevegm, Belgium

Division of Ser. No. 108,355, Jan. 21, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,799

Int. Cl. B29f *3/10*

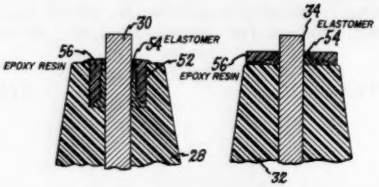
U.S. Cl. 264—174 **3 Claims**



An improved process for manufacturing plastic coated wire is taught which comprises heating the wire to be coated to an

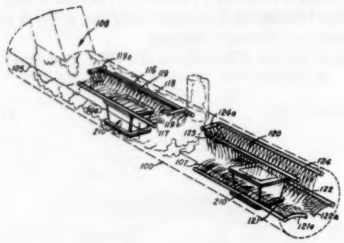
elevated temperature, passing the heated wire through an extrusion zone maintained at an elevated temperature and pressure in which a polyester plastic in molten condition is coated on the heated wire, and cooling the plastic coated wire at a rate sufficient to maintain the plastic primarily in the amorphous state. In a preferred embodiment, a steel wire is coated with polyethylene terephthalate in which the coating is at least 80 percent amorphous and 0.1 to 0.3 mm in thickness. An improved wire product is produced which may be advantageously utilized for the manufacture of barbed wire, wire mesh, wire netting, wire fences and the like.

3,829,546
SEALING OF MOLDED BUSHINGS
Richard F. Hunter, and Gerhard O. Mietz, both of Hickory, N.C., assignors to General Electric Company
Filed Nov. 22, 1972, Ser. No. 308,735
Int. Cl. H01b *17/30*
U.S. Cl. 264—262 **3 Claims**



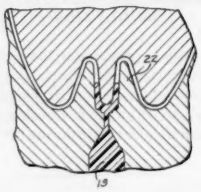
A method of sealing a molded bushing to prevent leaking. The metal conductor area just beyond the edge of the bushing is coated with an elastomeric material. The coated area is then covered with a resinous material such as a thermosetting epoxy resin, which adheres to the bushing, the conductor, and the elastomeric material. Both the thermosetting material and the elastomeric material are then cured to provide a watertight seal between the end of the bushing and the electrical conductor.

3,829,547
METHOD FOR POLYMERIZING PLASTIC
Sanford N. Milner, Riverview, Ala., assignor to Milner Corporation, Opelika, Ala.
Continuation of Ser. No. 825,740, May 19, 1969, abandoned.
This application Oct. 12, 1972, Ser. No. 296,885
Int. Cl. B29c *11/00*
U.S. Cl. 264—297 **11 Claims**



A method for the polymerization of plastic including conveying means, heating means, cooling means, and control means for controlling the conveying, heating and cooling means. The control means causes the conveying means to move the raw unpolymerized plastic in a mold into the heating means, hold the plastic and mold in the heating means for a predetermined period of time to heat the plastic to polymerization temperature, to transfer the heated plastic and mold to the cooling means, and hold the heated plastic and mold in the cooling means for a predetermined time to cool the plastic and mold. The cooling means creates a fog spray cooling mist therein as well as a direct spray to cool the plastic and mold.

3,829,548
INJECTION MOLDING PROCESS
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation of Ser. No. 214,166, Dec. 30, 1971, abandoned.
This application June 20, 1973, Ser. No. 371,652
Int. Cl. B29f *1/06*
U.S. Cl. 264—328 **1 Claim**



The process for injection molding relatively thin walled and relatively deep hollow plastic articles with accurately controlled wall thicknesses.

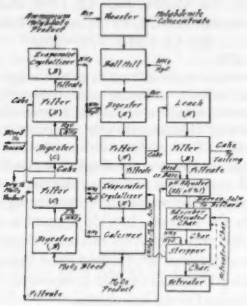
3,829,549
PROCESS FOR TREATING WASTE PHOTOGRAPHIC PROCESSING SOLUTION AND RECOVERING RESIDUAL SILVER THEREFROM AS A SILVER HALIDE
Ralph Anderson, Saratoga, and Rodney B. Beyer, both of Sunnyvale, Calif., assignors to Future Systems, Inc., Los Gatos, Calif.
Filed Oct. 30, 1972, Ser. No. 302,008
Int. Cl. C01g *5/00*
U.S. Cl. 423—43 **9 Claims**

A formulation and method for treating waste photographic processing solutions to destroy the pollutant nature of the solution and recover residual silver from the solution. Waste photographic processing solutions containing silver thiosulfate complexes and/or sulfite, such as exhausted fixing solutions, are treated with a chemical formulation including an oxidant of sodium chlorate in the presence of an acidic buffering agent. The formulation oxidizes the thiosulfate and/or sulfite ions of the solution to the sulfate state and precipitates the silver ion as an insoluble halide.

3,829,550
PROCESS FOR MAKING HIGH PURITY MOLYBDENUM OXIDE AND AMMONIUM MOLYBDATE
Richard A. Ronzio, Golden; John W. Lane, Lakewood, and John D. Vincent, Golden, all of Colo., assignors to American Metal Climax, Inc., New York, N.Y.
Filed Sept. 25, 1972, Ser. No. 291,922
Int. Cl. C01g *41/00*
U.S. Cl. 423—54 **7 Claims**

A process for producing a high grade molybdenum trioxide and/or ammonium molybdate product whereby an oxidized molybdenite concentrate is subjected to an ammonium hydroxide leaching step including a digestion phase in which an oxidation of some of the impurities therein, particularly iron, is effected, resulting in a coprecipitation of iron and aluminum hydroxide, together with other impurities including lead, bismuth, tin, arsenic, phosphorous, soluble silica, and the

like. The resultant aqueous solution containing ammonium molybdate is filtered and thereafter crystallized, followed by calcining to produce a high purity molybdenum trioxide product. It is also contemplated that all or a portion of the molybdenum trioxide product derived from the calciner can be subjected to a second phase purification operation in which



the molybdenum trioxide is digested with a dilute nitric acid solution to effect a further leaching or residual contaminating constituents, whereafter the molybdenum oxide value is redissolved in an aqueous ammonium hydroxide solution which is filtered and subsequently crystallized to produce a high purity ammonium molybdate product.

3,829,551

ATMOSPHERE PURIFICATION OF XENON, RADON & RADON DAUGHTER ELEMENTS

Lawrence Stein, Downers Grove, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 27, 1973, Ser. No. 345,419
Int. Cl. B01d *53/34*
U.S. Cl. 423—210 **9 Claims**

A method of purifying an atmosphere of xenon, radon and radon daughter elements by passing the atmosphere containing these elements through a reaction bed of dioxygenyl hexafluoroantimonate, which oxidizes the xenon, radon and radon daughter elements to their respective fluorides which remain in the reaction bed and are thus removed from the atmosphere, and recirculating the purified atmosphere. The method is also useful for separating the before-named elements from krypton.

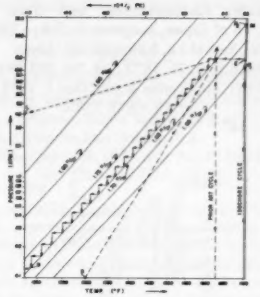
3,829,552

METHOD OF MASSIVELY HYDRIDING ZIRCONIUM-URANIUM ALLOY

Edward L. Reed, Woodland Hills, Calif., assignor to North American Rockwell Corporation

Filed Oct. 12, 1962, Ser. No. 230,803
Int. Cl. C01g *25/00, 43/00*
U.S. Cl. 423—255 **9 Claims**

1. A process of massively hydriding a zirconium-uranium alloy fuel element, which comprises slowly heating the alloy in a vacuum to a temperature of about 1,500°–1,850°F., contacting said alloy with hydrogen until a preselected H/Zr ratio is obtained at a pressure substantially greater than atmospheric,



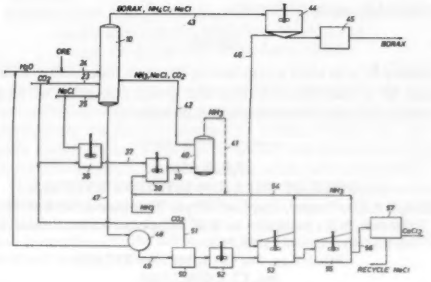
isochorically cooling the resulting composition to at least a temperature no higher than approximately 1,390°F., and then cooling said composition to ambient conditions.

3,829,553

PROCESS FOR TREATING BOROCALCIC ORES

Lawrence Lynn, Houston, Tex., assignor to General Crude Oil & Minerals Company, S.A., Houston, Tex.

Filed Aug. 2, 1972, Ser. No. 277,347
Int. Cl. C01b *35/00*; **C01c** *1/16*; **C01f** *11/02*
U.S. Cl. 423—279 **6 Claims**



Borax is produced by reacting carbon dioxide, sea water and boracalcic minerals. One embodiment includes the steps of producing borax by reacting carbon dioxide, sea water and a slurry of crude or beneficiated borocalcic ores in the presence of ammonia and the step of reacting calcined and slaked calcium oxide and ammonium chloride in water solution to produce calcium chloride.

3,829,554

PURIFICATION OF PHOSPHAZENE MONOMER

Adel F. Halasa, Bath, and Dennis L. Snyder, Kent, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

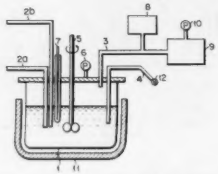
Filed Dec. 3, 1971, Ser. No. 204,707
Int. Cl. C01b *21/00, 25/00*
U.S. Cl. 423—300 **2 Claims**

A process for increasing the yield of useful products obtained from polymerization of the distillate from impure commercially available $(NPCl_2)_n$ starting material, to $(NPCl_2)_x$ rubber and derivatives thereof, the process consisting of preheating the impure material prior to distillation thereof. The subscript "*n*" in this specification represents an integer generally 7 or less. The subscript "*x*" in this specification represents an integer up to about 50,000.

3,829,555
METHOD OF MANUFACTURING SILANES

Hisashi Muraoka, Yokohama; Masafumi Asano, Kawasaki; Taizo Ohashi, Kanagawa-ken, and Yuzo Shimazaki, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Saiwai-ku, Kawasaki-shi, Japan

Filed Sept. 26, 1972, Ser. No. 292,394
Claims priority, application Japan, Oct. 1, 1971, 46-76281
Int. Cl. G01b *33/04*
U.S. Cl. 423—347 7 Claims



A method of manufacturing silances expressed by a general formula:

$$Si_nH_{2n+2}$$

(where n is an integer of 1 to 3) by disproportionating alkoxysilanes expressed by a general formula:

$$H_nSi(OR)_{4-n}$$

(where R is an alkyl group having less than four carbon atoms and n is an integer of 1 to 3) in the presence of alcoholate expressed by a general formula:

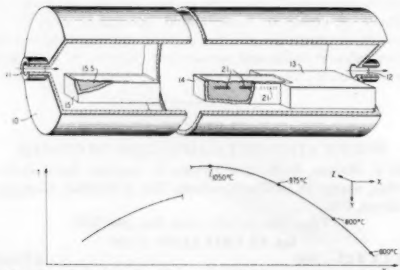
ROM

(where R is an alkyl group having less than four carbon atoms and M is one selected from the group consisting of alkali metals, alkaline earth metals and aluminum).

3,829,556
GROWTH OF GALLIUM NITRIDE CRYSTALS

Ralph Andre Logan, and Carl Dryer Thurmond, both of Morristown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 24, 1972, Ser. No. 237,896
Int. Cl. C01h *21/06*
U.S. Cl. 423—409 10 Claims



The size and photoluminescent efficiency of crystals of gallium nitride, grown in a solution of molten gallium and bismuth, are improved by maintaining the partial pressure of ammonia vapor in a hydrogen gas atmosphere flowing above the solution at a value which is, at most, about an order of magnitude greater than the "equilibrium pressure" of formation vs. decomposition of gallium nitride. The photoluminescent efficiency of a blue band, whose energy is centered around 4,350 angstroms, emitted by such gallium nitride crystals is also improved by introducing zinc vapor into the carrier gas.

3,829,557
PRODUCTION OF CHLORINE DIOXIDE

John D. Winfield, Etobicoke, Ontario, Canada, assignor to ERCO Industries Limited, Islington, Ontario, Canada

Division of Ser. No. 45,850, June 12, 1970, abandoned. This application July 28, 1971, Ser. No. 166,773
Int. Cl. C01b *7/04*, *11/02*
U.S. Cl. 423—478 7 Claims

Chlorine dioxide is produced in a two-stage operation. In the first stage sodium chlorate and hydrochloric acid are reacted in aqueous solution at elevated temperature to form a gaseous mixture of chlorine dioxide, chlorine and evaporated water vapor and to form sodium chloride in the reaction zone of the first stage. In the second stage, a second reaction solution is formed containing sodium chlorate, sodium chloride and sulphuric acid, the sodium chloride being constituted at least in part by the sodium chloride formed in the first stage. Sodium sulphate and a gaseous mixture of chlorine dioxide, chlorine and water vapor are formed upon heating the second reaction solution. Chlorine dioxide is recovered from the gaseous mixtures formed in the two stages.

3,829,558
DISPOSAL OF WASTE PLASTIC AND RECOVERY OF VALUABLE PRODUCTS THEREFROM

Michael E. Banks, Torrance; Walter D. Lusk, and Robert S. Ottinger, both of Hawthorne, all of Calif., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

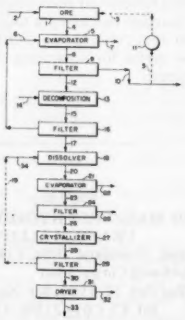
Filed June 21, 1971, Ser. No. 154,861
Int. Cl. C01b *7/08*; C07c *15/10*
U.S. Cl. 423—481 5 Claims

A method of disposing of waste plastic without polluting the environment by passing the plastic to a reactor, heating the plastic in the presence of a gas to at least the decomposition temperature of the plastic, and recovering decomposition products therefrom. The preferred embodiment utilizes a heated inert carrier gas as the source of heat.

3,829,559
SOLUTION MINING PROCESS

William B. Dancy, Lakeland, Fla., assignor to International Minerals & Chemical Corporation, Libertyville, Ill.

Filed Feb. 18, 1971, Ser. No. 116,569
Int. Cl. C01d *3/04*; C01f *5/30*
U.S. Cl. 423—497 10 Claims



An improved process for the recovery of ore values from carnalitte by solution mining techniques is disclosed. The car-

nallite-containing ore deposit is contacted with an aqueous stream, which may be merely water or an aqueous solution of magnesium chloride, to impregnate the same with magnesium-containing ore values. These dissolved ore values are primarily carnallite when the aqueous stream contains at least about 25 percent magnesium chloride and magnesium chloride when the aqueous stream initially contains a smaller quantity of magnesium chloride. The impregnated stream is removed from the ore deposit and sufficient water is removed to precipitate substantially all the potassium-containing ore values dissolved from the formation. The precipitated potassium containing ore values are in the form of carnallite. The resulting slurry is filtered and the magnesium chloride-containing filtrate is removed, at least part of which provides magnesium chloride product. The filter cake is slurried with sufficient water to decompose the carnallite to soluble magnesium chloride and insoluble potassium chloride. The magnesium chloride solution is removed and advantageously recycled to the earlier water removal step in the process. The insolubles may be treated to provide potassium chloride products.

3,829,560

RECOVERY OF SULFUR DIOXIDE FROM GAS STREAMS

Louis L. Fornoff, Cedar Grove, N.J.; John J. Collins, Katonah, N.Y., and Rolla D. Taylor, North Ridgeville, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed June 14, 1972, Ser. No. 262,561

Int. Cl. C01b *17/72*

U.S. Cl. 423—522 **4 Claims**

Sulfur dioxide in the effluent from the acid absorber of a contact process sulfuric acid plant is adsorbed in a fixed bed of molecular sieve adsorbent, purged from the adsorption bed with hot dry oxygen-containing gas and recycled to a catalytic converter in admixture with the oxygen-containing purge gas for conversion to sulfur trioxide and consequent reaction with water to form sulfuric acid.

3,829,561

IRON PREPARATION AND PROCESS FOR ITS MANUFACTURE

Hellmuth Carl Heinrich, c/o Farbwerke Hoechst AG., Frankfurt(Main), Germany

Filed Mar. 19, 1969, Ser. No. 808,676

Claims priority, application Germany, Mar. 21, 1968, 1767017

Int. Cl. A61k *9/00, 9/04, 27/00*

U.S. Cl. 424—44 **7 Claims**

Iron preparation for oral application containing ferro-ions in the form of an iron-II-salt, a physiologically tolerable solid acid and a compound yielding carbon dioxide.

3,829,562

DICALCIUM PHOSPHATE AND ITS METHOD OF PREPARATION

Keun Young Kim, and Kenneth J. Shaver, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

This application June 7, 1971, Ser. No. 150,717

Int. Cl. A61k *7/16*

U.S. Cl. 424—57 **3 Claims**

Anhydrous dicalcium phosphate having an assay of at least 90 percent by weight and composed of particles, a major proportion of which have a particle size of from about 0.1 to 1.0 microns and a specific surface area of at least 10 square meters per gram is prepared by adding well dispersed, substantially dry calcium oxide or calcium hydroxide to phosphoric acid having a concentration of from about 40% to 80% H_3PO_4 by weight and maintaining the temperature of the reaction medium sufficiently high to provide dicalcium phosphate substantially free from water of crystallization. Dentifrice compositions containing this product provide effective polishing action without undue abrasion. Such compositions are prepared by direct blending of conventional dentifrice ingredients with an aqueous paste containing 45 percent to 65 percent by weight anhydrous dicalcium phosphate.

3,829,563

EMOLLIENT CLEANSING COMPOSITIONS

Richard H. Barry, Bloomfield, N.J.; Meyer Matluck, Flushing, and Philip Orshitzer, Staten Island, both of N.Y., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Nov. 30, 1972, Ser. No. 311,035

Int. Cl. A61k *7/06, 27/00*

U.S. Cl. 424—70 **9 Claims**

Cleansing compositions for the hair and skin which deposit an emollient, conditioning film thereon during washing are disclosed. The compositions, which may be in a liquid or semi-solid form, are oil-in-water emulsions characterized by a particular particle size distribution of the oil phase and are comprised of from about 10 to about 70 percent by weight petrolatum, from about 5 to about 30 percent by weight of one or more organic foaming detergents, from about 1 to about 10 percent by weight of an emulsifier, from about 0.5 to about 5 percent weight of an organic foam stabilizer, from about 0 to about 20 percent by weight of one or more emollient substances other than petrolatum, and water.

3,829,564

COATED PRODUCTS FOR VETERINARY USE

Lorraine Anne Merry, and David Henry Solomon, both of Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

Division of Ser. No. 55,968, July 17, 1970, abandoned. This application Feb. 14, 1973, Ser. No. 332,518

Int. Cl. A23k *1/00, 3/00;* **A61k** *27/00*

U.S. Cl. 424—78 **8 Claims**

Copolymers and terpolymers consisting essentially of (a) a basic substituted acrylate or methacrylate;and (b) at least one ethylenically unsaturated compound selected from vinyl aromatic hydrocarbons, vinyl esters, normal and branched chain alkyl esters of acrylic and methacrylic acids, and acrylonitrile.

The polymers which are substantially insoluble in aqueous media at pH6 or more but soluble at pH3 or less are used as coatings for nutrient or therapeutic substances for administration to ruminants. The substances thus are rendered resistant to attack and breakdown in the rumen.

3,829,565

COMBATING INSECTS, ACARIDS AND NEMATODES USING S,S-DI(2-ALKOXY-ETHYL)PHOSPHORO-OR PHOSPHONOTHIONOTHIOLATES

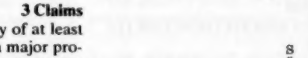
Shigeo Kishino; Akio Kudamatsu, and Kozo Shiokawa, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 178,488, Sept. 7, 1971, Pat. No. 3,755,508. This application Jan. 26, 1973, Ser. No. 326,620

Int. Cl. A01n *9/36*

U.S. Cl. 424—217 **10 Claims**

S,S-di (2-alkoxy-ethyl) phosphoro-or phosphonothionodithiolates of the general formula



(I)

wherein

R^1 is a lower alkyl or lower alkoxy radical, and

R^2 is a lower alkyl radical,

which possess insecticidal, acaricidal and nematocidal properties.

3,829,566

METHOD FOR CONTROL OF WHITE MUSCLE DISEASE

Henry C. Burns, and George C. McConnell, both of Piedmont, Calif., assignors to Chromalloy Pharmaceutical, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 352,681, March 17, 1964, abandoned. This application Apr. 28, 1967, Ser. No. 639,923

Int. Cl. A61k *15/10*

U.S. Cl. 424—131 7 Claims

White muscle disease is controlled by administering the combination of a selenium compound and vitamin E, by parenteral injection to any mammal or by oral ingestion in mammals other than herbivores.

3,829,567

ALKALI METAL SALTS OF NUCLEOTIDES USEFUL AS MEDICINES FOR THE FIBRONILITYC SYSTEM

Adriano Butti, Como; Giuseppe Prino, Milano, and Marisa Mantovani, Villa Guardia, all of Italy, assignors to Crinos Industria Farmacobiologica S.p.A., Villa Guardia, Italy

Filed Nov. 2, 1971, Ser. No. 194,920

Claims priority, application Italy, Nov. 3, 1970, 31309/70

Int. Cl. A61k *27/00*; C07d *51/50*

U.S. Cl. 424—180 6 Claims

Compositions of matter useful as medicines active on the fibrinolytic system consisting of alkali metal salts of nucleic acids extracted from animal or vegetable tissues and having a phosphorous content from 7.8 to 9.7 percent, a nitrogen content from 13.8 to 17.6 percent and a viscosity not lower than 1.05 centipoises.

3,829,568

INSECTICIDE COMPOSITION DERIVED FROM PHOSPHORIC ESTERS CONTAINING ONE UNSATURATED ALIPHATIC CHAIN

Daniel Demozay, Villeurbanne, France, assignor to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques, Lyon, France

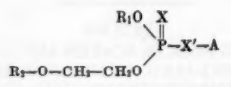
Filed Mar. 19, 1970, Ser. No. 21,200

Claims priority, application France, Mar. 21, 1969, 69.7608; Feb. 27, 1970, 70.2061

Int. Cl. A01n *9/36*

U.S. Cl. 424—203 10 Claims

Insecticide compositions wherein the active materials are phosphorus derivatives of the general formula



wherein R_1 and R_2 are lower alkyl radicals preferably of 1–3 carbon atoms, X and X′ are sulfur or oxygen, R_2OCH_2 - may also be a tetrahydrofurfuryl cycle, A is an alkenyl or alkynyl radical containing from two to five carbon atoms, which may be substituted by one or more identical or different halogen atoms.

3,829,569

THERAPEUTIC COMPOSITION AND METHOD FOR ITS USE

Leonard M. Rice, Baltimore, Md., assignor to Tri-Kem Corporation, Washington, D.C.

Filed Oct. 27, 1967, Ser. No. 678,502

Int. Cl. A61k *27/00*

U.S. Cl. 424—232 4 Claims

A therapeutic composition for combatting all of the major symptoms resulting from the overindulgence of alcoholic beverages comprising a two-part formulation one part of which contains aspirin and aluminum hydroxide and the other part of which contains magnesium carbonate, magnesium trisilicate, nicotinamide, thiamine hydrochloride and peppermint oil and either or both of which contain caffeine. A method for using said composition.

3,829,570

THERAPEUTIC COMPOSITIONS AND METHOD

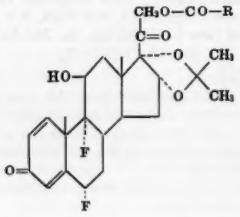
Joachim Heider, Warthausen-Oberhofen; Wolfgand Eberlein, and Gunther Engelhardt, both of Biberach/Riss, all of Germany, assignors to C. H. Boehringer Sohn, Ingelheim/Rhein, Germany

Continuation-in-part of Ser. No. 109,975, Jan. 26, 1971, Pat. No. 3,740,392. This application Jan. 22, 1973, Ser. No. 325,558

Int. Cl. A61k *17/00*

U.S. Cl. 424—241 10 Claims

Novel anti-inflammatory compositions comprised of an effective amount of an ester of fluocinolone-acetonide or 6α,9α-difluoro-16α,17α-isopropylidenedioxy-$\Delta^{1,4}$-pregnadiene-11β,21-diol-c,20-dione 21-diol-3,20-dione of the formula



wherein R is selected from the group consisting of pyridine-3,pyridine-4, benzofuran-2 or l-menthoxymethyl and a method of treating inflammation in warm-blooded animals.

3,829,571

ANALGESIC COMPOSITION

Wilhelm Bartmann, Neuenhain/Taunus, and Hans-Georg Alpermann, Kelkheim/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

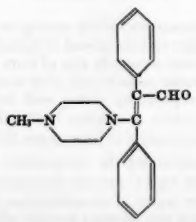
Division of Ser. No. 210,614, Dec. 21, 1971, Pat. No. 3,772,298. This application June 11, 1973, Ser. No. 368,471

Claims priority, application Germany, Dec. 23, 1970, 2063384

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 3 Claims

Analgesic compositions containing, as an essential active ingredient, 1-(1,2-diphenyl-2-formylvinyl)-4-methylpiperazine or an acid addition salt thereof with a physiologically tolerated acid. The active compound has the formula



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3,829,572

ANALGESIC COMPOSITION

Wilhelm Bartmann, Neuenhain/Taunus; Hans-Georg Alpermann, Kelkheim/Taunus, and Christian Jochum, Offenbach/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

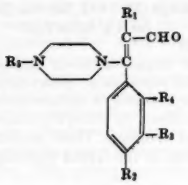
Division of Ser. No. 210,621, Dec. 21, 1971, Pat. No. 3,772,297. This application June 11, 1973, Ser. No. 368,591

Claims priority, application Germany, Dec. 4, 1971, 2160235

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 8 Claims

Analgesic composition containing, as an essential active ingredient, a 1-vinylcarbonyl-piperazine compound of the formula



or a salt thereof with physiologically tolerable acid, wherein R_1 is hydrogen, alkyl, phenyl, or halo-, alkyl-, or alkoxy-substituted phenyl; R_2, R_3, and R_4 may be the same or different and are hydrogen, alkyl, alkoxy, or halogen; and R_5 is alkyl or phenyl.

3,829,573

HEXAHYDRO PYRAZINOQUINOLINES AS ANTI-SCHISTOSOMAL AGENTS

Hugh C. Richards, Canterbury, England, assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 789,610, Jan. 7, 1969, abandoned. This application July 13, 1973, Ser. No. 379,009

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 11 Claims

Various 8-methyl and 8-hydroxymethyl-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinolines having either nitro, cyano or halogen substituted at the 7- or 9-position of the molecule and the 3-allyl, 3-alkyl having one to five carbon atoms, 3-hydroxyalkyl having two to six carbon atoms, 3-cyanoalkyl having up to six carbon atoms in the alkyl moiety, 3-alkanoyloxyalkyl having from two to six carbon atoms in the oxyalkyl moiety and up to six carbon atoms in the alkanoyl moiety, 3-cycloalkyl having up to six carbon atoms, 3-phenylalkyl having up to three carbon atoms in the alkyl moiety, 3-carboxyalkyl having up to six carbon atoms in the alkyl moiety, 3-alkanoyl having up to six carbon atoms, 3-carboxyalkanoyl having up to six carbon atoms, 3-carboxyacrylyl, 3-benzoyl, 3-furoyl, 3-thenoyl, 3-phthaloyl, 3-picolinoyl, 3-phenylacetyl, 3-carboxy, 3-carbamoyl, 3-thiocarbamoyl and the 3-carbalkoxy having from one to 12 carbon atoms in the alkyl moiety derivatives thereof, their preparation and their utility as anti-schistosomal agents. Typical members include 7-chloro-8-methyl-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline and 8-hydroxymethyl-9-chloro-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline.

3,829,574

HYPOGLYCEMIC PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Eberhard Kutter; Gerhart Griss; Wolfgang Grell, and Manfred Kleemann, all of Biberach/Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim/Rhein, Germany

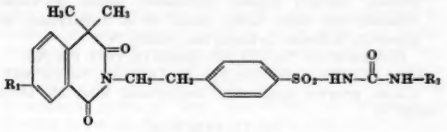
Division of Ser. No. 26,072, April 6, 1970, Pat. No. 3,708,486. This application Oct. 6, 1972, Ser. No. 298,801

Claims priority, application Germany, Apr. 17, 1969, 1919570; Jan. 5, 1970, 2000339

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 2 Claims

Hypoglycemic pharmaceutical compositions containing a 2-[p-(N'-cycloalkyl-carbamido-N-sulfonyl)-phenethyl]-1,2,3,4-tetrahydro-1,3-dioxo-4,4-dimethyl-isoquinoline of the formula



wherein

R_1 is hydrogen, chlorine, bromine or alkoxy of one to four carbon atoms, and

R_2 is cyclohexyl or adamantyl-(1),

or an alkali metal salt thereof; and a method of lowering the blood sugar level therewith.

ERRATUM

For Class 424—263 see:
Patent No. 3,829,424

3,829,575

SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 271,459, July 13, 1972, which is a continuation-in-part of Ser. No. 00,464, Jan. 2, 1970, abandoned. This application May 17, 1973, Ser. No. 361,356

Int. Cl. A01n *9/02, 9/22, 9/20*

U.S. Cl. 424—263 8 Claims

The present invention relates to certain processes and compositions useful for inhibiting the growth of slime in water and, in particular, water used for industrial purposes; for example, in the manufacture of pulp paper, in the manufacture of paper, in cooling water systems and in effluent water treatment. The novel processes and compositions of the present invention are processes or mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae, which produce slime in aqueous systems or bodies which are objectionable from either an operational or aesthetic point of view. Specifically, the invention is directed to the use of compositions comprising a combination of a bromonitrostyrene and cetyl pyridinium chloride.

3,829,576

METHOD OF TREATING NEISSERIA GONORRHOEAE WITH DIHYDROAMPICILLIN

Harvey E. Alburn, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 171,367, Aug. 12, 1971. This application Aug. 26, 1971, Ser. No. 175,337

Int. Cl. A61k *21/00*

U.S. Cl. 424—271 1 Claim

A method for treating Neisseria infections is described using an effective amount of 6-[2-amino-2-(1,4-cyclohexadien-1-yl) acetamido]pencillanic acid.

3,829,577

METHYLENEDIOXY-PHENOXY DERIVATIVES AS AGENTS FOR UPSETTING HORMONE BALANCE IN INSECTS

Madhukar Subraya Chodnekar, Basel; Albert Pfiffner, Pfaffhausen; Norbert Rigassi, Arlesheim; Ulrich Schwieter, Reinach, and Milos Suchy, Basel, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 123,105, March 10, 1971, Pat. No. 3,686,222. This application Apr. 24, 1972, Ser. No. 247,083

Claims priority, application Switzerland, Mar. 25, 1970, 4620/70

Int. Cl. A01n *9/28*

U.S. Cl. 424—278 4 Claims

Methylenedioxy substituted benzyloxy or phenyloxy ethers of aliphatic hydrocarbons, wherein the aliphatic group contains between 6 and 11 carbon atoms. These ethers are useful in killing and preventing the proliferation of insects by upsetting their hormonal balance.

3,829,578

ANTIVIRAL COMPOSITIONS CONTAINING BIS-BASIC ETHERS AND THIOETHERS OF XANTHENE AND XANTHEN-9-ONES AND METHODS OF TREATING VIRUSES THEREWITH

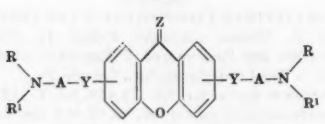
Robert W. Fleming, Ann Arbor, Mich., and Albert A. Carr, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Continuation of Ser. No. 96,976, Dec. 10, 1970, abandoned. This application Nov. 2, 1972, Ser. No. 303,255

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 7 Claims

Antiviral compositions and methods of inhibiting or inactivating viruses by administering to hosts an antivirally effective quantity of an active ingredient are disclosed herein. The active ingredients are those compounds having the formula



wherein Z is oxygen or H_2; each Y is oxygen or divalent sulfur; each A is a straight or branched alkylene chain of from two to four carbon atoms and which separates the amino nitrogen and Y by at least two carbon atoms; each R and R^1 are individually selected from hydrogen, lower alkyl of from 1 to 4 carbon atoms, alkenyl of from three to six carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group; or each set of R and R^1 taken together with the nitrogen atom to which they are attached is a saturated monocyclic heterocyclic group such as pyrrolidino, piperidino, morpholino or N-(lower)-alkylpiperazino; or pharmaceutically acceptable acid addition salts of said compounds.

3,829,579

STABLE SOLUTIONS OF PGE-TYPE COMPOUNDS

Randall G. Stehle, and Thomas O. Oesterling, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 194,686, Nov. 1, 1971, abandoned. This application May 11, 1973, Ser. No. 359,486

Int. Cl. A61k *27/00*

U.S. Cl. 424—312 16 Claims

Stable solutions of PGE-type compounds are obtained by dissolving the compounds in an anhydrous, water-miscible, pharmacologically acceptable, dipolar aprotic solvent.

3,829,580

FUNGICIDAL DITHIOMALONAMIDES AND THEIR CONGENERS

Horst O. Bayer, Levittown, and Ernest D. Weiler, Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 24, 1972, Ser. No. 247,070

Int. Cl. A01n *9/20*

U.S. Cl. 424—320 3 Claims

This invention relates to novel compositions of matter which are selected metal salts, quaternary ammonium metal chelates, and polychelates of dithiomalonamide, its N-alkyl and N-Aryl derivatives, its phenylhydrazono derivatives, and its higher alkylene homologs. These permit significant control of fungal infections of the Genus Botrytis and against grape downy mildew.

3,829,581

ALIPHATIC POLYCYCLIC AMIDOXIMES AS INFLUENZA ANTIVIRAL AGENTS

Richard L. Ellis, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 57,805, July 23, 1970, abandoned. This application Oct. 19, 1972, Ser. No. 298,835

Int. Cl. A61k *27/00*

U.S. Cl. 424—327 8 Claims

Aliphatic polycyclic amidoximes exhibit influenza antiviral activity in warm-blooded animals. A typical compound is 1-adamantanecarboxamidoxime.

3,829,582

METHOD OF IMPARTING FATTY-FRIED FLAVOR TO FOODS AND COMPOSITION

Dante G. Guadagni, Moraga, and Ron G. Buttery, Richmond, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 21, 1972, Ser. No. 290,932

Int. Cl. A23l *1/26*

U.S. Cl. 426—65 4 Claims

A mixture containing methional, 2-acetylthiazoline, deca-2,4-dienal, 2-octenal, 2-acetyl-1,4,5,6-tetrahydropyridine, 2-ethyl-3,6-dimethylpyrazine, 2,6-diethylpyrazine, and 2-phenylacetaldehyde is used to impart a fatty-fried flavor to potato and other food products.

3,829,583

MIXTURE OF MALTOBIONIC ACID AND MONOSODIUM GLUTAMATE AS A FOOD SEASONING

Shokichi Yuen, Okayama, Japan, assignor to Ken Hayashibara, Okayama-ken, Japan

Filed Feb. 14, 1972, Ser. No. 226,331

Claims priority, application Japan, Feb. 20, 1971, 46-7714

Int. Cl. A23l *1/26*

U.S. Cl. 426—175 6 Claims

Maltobionic acid (4-glucosyl-gluconic acid) improves the taste of liquid and solid food, particularly when employed

jointly with maltose and/or monosodium glutamate or the known combinations of monosodium glutamate with sodium 5′-inosinate and sodium 5′-guanylate. To be fully effective, the maltobionic acid should amount to more than one third of the combined weight of the monosodium glutamate, sodium 5′-inosinate and sodium 5′-guanylate, and the maltose, if present, should amount to more than five times the last-mentioned combined weight.

3,829,584

CONTINUOUS SEPARATING AND STANDARDIZING OF MILK

Dale A. Seiberling, Roscoe, Ill., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Aug. 21, 1972, Ser. No. 282,497
Int. Cl. A23c *7/00, 13/02*
U.S. Cl. 426—231 **11 Claims**

A continuous on-stream milk standardizing and blending system. Whole milk having a known fat content is introduced into a centrifugal separator for separating the milk into its skim and cream components; the milk entering the separator through a conduit having a flow meter positioned therein for providing a digital output signal corresponding to the flow rate therethrough. A digital control unit compares the input signal from the milk flow meter with an input signal received from a similar flow meter positioned in the cream conduit downstream from an air-operated throttling valve; the control unit providing a control signal which regulates the setting of the throttling valve. This setting controls the flow rate of cream through the cream conduit and, thus, establishes the fat test of the cream based on the known fat test of the whole milk. A portion of the cream is then recombined with the skim component in an amount controlled by the digital control unit so as to provide a standardized milk product of the desired fat content (e.g. 3.5% milk). Various additional additives (e.g. condensed skim milk) can also be blended with the standardized milk product.

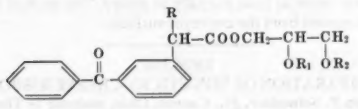
3,829,585

NOVEL BENZOYLPHENYLACETIC ACID ESTERS IN THE TREATMENT OF PAIN AND INFLAMMATION

Andre Allais, Les Lilas; Jean Meier, Coeuilly-Champigny, and Jacques Dube, Eaubonne, all of France

Division of Ser. No. 133,429, April 12, 1971, Pat. No. 3,741,988. This application Apr. 2, 1973, Ser. No. 346,770
Claims priority, application France, Apr. 15, 1970. 70.13579; Sept. 24, 1970, 70.34591
Int. Cl. A61k *27/00*
U.S. Cl. 424—278 **5 Claims**

Racemates and optically active isomers of benzoylphenylacetic acid esters of the formula



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wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 7 carbon atoms, R_1 and R_2 are hydrogen or taken together are

P and Q being alkyl of 1 to 5 carbon atoms and the two benzene rings may be optionally substituted with at least one member of the group consisting of chlorine, fluorine, bromine, trifluoromethyl and alkyl and alkoxy and alkylthio of 1 to 7 carbon atoms, intermediates and process for their preparation and their use as analgesics and antiinflammatory agents.

3,829,586

SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 271,459, July 13, 1972, which is a continuation-in-part of Ser. No. 000,464, Jan. 2, 1970, abandoned. This application May 17, 1973, Ser. No. 361,104
Int. Cl. A01n *9/02, 9/20*
U.S. Cl. 424—329 **8 Claims**

The present invention relates to certain processes and compositions useful for inhibiting the growth of slime in water and, in particular, water used for industrial purposes; for example, in the manufacture of pulp paper, in the manufacture of paper, in cooling water systems and in effluent water treatment. The novel processes and compositions of the present invention are processes or mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae, which produce slime in aqueous systems or bodies which are objectionable from either an operational or aesthetic point of view. Specifically, the invention is directed to the use of compositions comprising a combination of a bromonitrostyrene and cetyl trimethyl ammonium bromide.

3,829,587

METHOD OF MAKING PROTEIN-CONTAINING FOODSTUFFS RESEMBLING MINCED-MEAT

Vladimir Borisovich Tolstoguzov, Prospekt Vernadskogo, 24, Kv. 95; Dmitry Borisovich Izjumov, Volokolamskoe shosse, 13, Kv. 56; Valery Yakovlevich Grinberg, Leninsky Prospekt, 94a, Kv. 174; Alla Nikolaevna Marusova, Ulista Lobachevskogo, 78, Kv. 154, and Violetta Teofilovna Chekhovskaya, Ulista Bolshaya Ordynka, 17, Kv. 10, all of Moscow, U.S.S.R.

Filed Apr. 21, 1971, Ser. No. 136,245
Claims priority, application U.S.S.R., Apr. 24, 1970 1427319
Int. Cl. A23j *3/00;* **A23l** *1/34*
U.S. Cl. 426—350 **5 Claims**

Protein containing foodstuffs resembling minced meat are produced by preparing of a mixture containing protein-containing raw food substances, flavouring aromatizing and dyeing agents, spices, salts, water and edible acids taken in amounts that ensure the value of pH of said mixture to be below the isoelectric point of the protein-containing food raw stock being introduced, and charged polysaccharides, followed by stirring the resulting mixture to form a protein-polysaccharide complex and introducing into said mixture while stirring, compounds of metals having a valence of at least two and substances that cause the value of pH of the mixture to exceed the isoelectric point of the protein-containing food raw stock, with subsequent heating of the mixture to destroy said protein-polysaccharide complex.

3,829,588

DIPEPTIDE LOW-GRADE COFFEES

Thomas P. Finucane, Hartsdale, and Joseph J. Halik, Ossining, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 19, 1972, Ser. No. 298,963
Int. Cl. A23f *1/04*
U.S. Cl. 426—354 **11 Claims**

The bitterness of low-grade coffee products is repressed by the addition of a dipeptide sweetener at the appropriate level.

3,829,589
METHOD OF MAKING PEANUT FLOUR

Akihiro Matsunaga, 32-4, Higashi-Ikebukuro, 2-Chome Toshima-ku, Tokyo, Japan

Filed Oct. 24, 1972, Ser. No. 299,733
Int. Cl. A21d *6/00*
U.S. Cl. 426—427 **13 Claims**

Improved free-flowing peanut flour, free of objectionable peanut odor and from which impurities including tannin have been removed, is produced by a process including the steps of gently parching shelled peanuts at a temperature of 50° to 90°C. for 3 to 6 minutes, soaking the peanuts in a saline solution for approximately 30 seconds to 5 minutes at a temperature of about 20° to 50°C., heat treating the peanuts in water at a temperature of 100° to 120°C. for 15 to 45 minutes, washing the peanuts in water, heat treating again in water at a temperature of 100°C., and then compressing and pulverizing the peanuts to micronized form so as to pass through a 300 mesh screen and spray drying the micronized peanuts to an off-white, free-flowing peanut flour free of impurities and objectionable odors.

In one example, 1 kilogram of peanuts are parched at 80°C. for 4 minutes, soaked in 2 liters of saturated saline solution at 120°C. for 1 minute, heat treated in 1.5 liters of water at 100°C. for 20 minutes, washed, heat treated in 2 liters of water at 90°C. for 30 minutes, and then compressed, micronized, and the flour obtained spray dried to obtain a free-flowing, off-white peanut flour.

3,829,590
METHOD OF UPGRADING WHEAT

Dale P. Phillips, 509 S. Garfield St., Enid, Okla. 73701, and Jefferson S. Schlesinger, Enid, Okla., assignors to said Phillips, by said Schlesinger

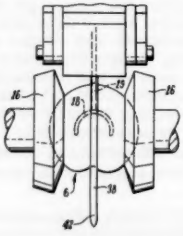
Filed May 5, 1972, Ser. No. 250,645
Int. Cl. A23l *1/10*
U.S. Cl. 426—478 **7 Claims**

A method for upgrading random wheat lots which comprises classifying wheat kernels in the lot according to kernel size so as to segregate kernels of relatively large size from kernels of relatively smaller size whereby certain high protein fractions may be derived from the lot and the total value of the lot upgraded.

3,829,591
FRUIT DE-STONING METHOD AND APPARATUS

David Alexander Browne, Bentleigh, Victoria, Australia, assignor to Filper Corporation, San Ramon, Calif.

Filed Mar. 2, 1973, Ser. No. 337,315
Int. Cl. A23n *3/08*
U.S. Cl. 426—485 **11 Claims**



A mechanism or knife assembly for de-coring fruit including at least one slicing blade and an elongate semi-circular coring blade which is mounted adjacent a cutting edge of the slicing blade and is rotatable relative to the slicing blade between inoperative and operative positions. The rotational axis of the coring blade lies generally within a plane containing the cutting edge of the slicing blade, and in the inoperative position the longitudinal axis of the coring blade also lies substantially within that plane, whereas in the operative position the coring blade extends laterally beyond each of two opposite sides of the slicing blade. In operation, an article of fruit is impaled on the slicing blade; the coring blade, which is then located within the body of the article of fruit, is rotated into its operative position; and the article of fruit is thereafter turned relative to both blades so that splitting and de-coring of the article of fruit occur simultaneously.

3,829,592
MEMBRANE SUBSTANCE CONCENTRATES

Arthur O. Bratland, Maudsvei 9, Heie, Norway

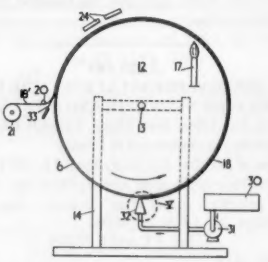
Filed Sept. 2, 1970, Ser. No. 69,132
Int. Cl. A23c *9/00*
U.S. Cl. 426—491 **22 Claims**

The invention relates to a method of preparing membrane substance concentrates which are especially useful as additives to milk products. One convenient procedure involves emulsifying a product of milk containing membrane substances with fat, separating the emulsion into aqueous serum and fat rich fractions, separating the fat rich fraction obtained into further aqueous serum and fat rich fractions and combining the aqueous serum fractions. If a more concentrated membrane substance concentrate is required, the resulting serum fractions can be emulsified with fat and the whole procedure repeated.

3,829,593
CONTINUOUS PREPARATION OF PASTRY

In-Wai Hui, Kowloon, Hong Kong, assignor to Winner Food Products Limited, Kowloon, Hong Kong

Filed June 17, 1970, Ser. No. 46,890
Claims priority, application Great Britain, Feb. 24, 1970, 8865/70The portion of the term of this patent subsequent to Aug. 13, 1990, has been disclaimed.
Int. Cl. A21d *13/08*
U.S. Cl. 426—496 **23 Claims**



A film of farinaceous paste is applied to an endless travelling conveyor surface. The film of paste is heated to cook the paste at least partially to pastry. The cooked film is then removed from the conveyor surface.

3,829,594
PREPARATION OF NON-STICKY CHEESE RIBBONS

William P. Schweizer, Jr., Canton, Ohio, assignor to The Bonnot Co., Kent, Ohio

Continuation of Ser. No. 115,021, Feb. 12, 1971, abandoned. This application June 8, 1973, Ser. No. 368,388
Int. Cl. A23c *19/00*
U.S. Cl. 426—516 **1 Claim**

Non-sticky ribbons of cheese for use in making processed cheese products are prepared by a process involving supplying 40 to 500 pound cheese blocks to conversion equipment wherein the blocks are divided into pieces by rotating knives followed by compressing the pieces with an auger and forcing the cheese through a screen with openings of about 0.015 to 0.375 inches in diameter using the minimum pressure required to force the cheese through the screen whereby the rise in the temperature of the cheese due to the compression thereof is no more than substantially 10°F.

ELECTRICAL

3,829,595
ELECTRIC DIRECT-ARC FURNACE

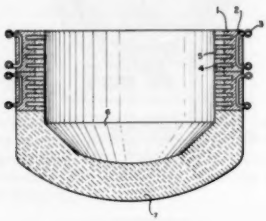
Toshio Nanjyo; Masayuki Aoshika, both of Yokohama, and Akinori Nakamura, Kamakura, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-To, Japan

Filed Jan. 24, 1973, Ser. No. 326,272

Claims priority, application Japan, Jan. 25, 1972, 47-10714[U]; Jan. 25, 1972, 47-10715[U]; Jan. 25, 1972, 47-10716[U]; Jan. 25, 1972, 47-10718[U]

Int. Cl. F27b *3/16*; **F27d** *1/12*

U.S. Cl. 13—32 **5 Claims**



A furnace proper of an electric direct-arc furnace characterized in that the furnace wall is constructed in a required form with a plurality of cooling blocks each of which comprises a cooling block proper made of a special metal the inner surface of which is lined with a refractory material and a cooling water tube embedded therein, so as to increase the life of the furnace wall.

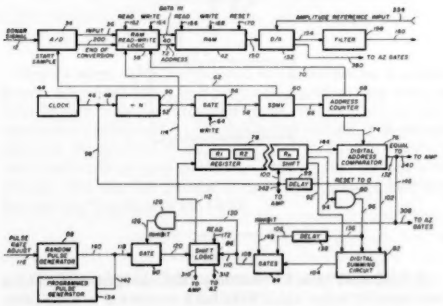
3,829,596
SONAR REVERBERATION SIMULATOR

Francis J. Murphree, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 26, 1973, Ser. No. 383,013

Int. Cl. G09b *9/00*

U.S. Cl. 35—10.4 **11 Claims**



An electrical system for simulating sonar reverberation wherein an original sonar signal is transferred to digital form and stored in a memory means, each signal sample at a different address, and logic and gating means are provided to effect individual replica readouts beginning at times corresponding to the arrival of energy at a receiver from scatterers at differing distances. Reference amplitude signal generation means is provided to adjust the amplitude of individual replicas such that by adjusting both replica numbers and amplitudes, one may more closely match natural reverberation arising from different sources. The disclosure also describes number generating, logic and comparator means to define different azimuth gates connected to simulate different beams of a multi-beam sonar.

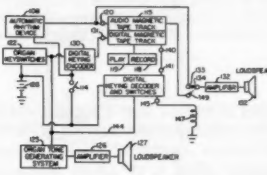
3,829,597
KEYBOARD INSTRUMENT PLAYER SYSTEM WITH TIME DIVISION MULTIPLEXING TECHNIQUES AND SYNCHRONIZED RHYTHM DEVICE

Richard H. Peterson, 11748 Walnut Ridge Drive 60464 and Robert A. Finch, 12219 South 89th Avenue 60464, both of Palos Park, Ill.

Filed Apr. 26, 1973, Ser. No. 354,844

Int. Cl. G10h *1/00*

U.S. Cl. 84—1.03 **11 Claims**



A player type electrically operated musical instrument includes a rhythm device for producing timed repetitive rhythm patterns of unpitched or semi-pitched percussive sounds. Information as to the playing of the keys of the instrument is encoded in digital form on one track of a magnetic tape using time division multiplexing techniques. The sounds produced by the rhythm device are simultaneously recorded on a second "audio" channel on the same magnetic tape. On "playback", the digital channel is decoded and used to "play" the same or a similar musical instrument, and the audio channel is reproduced to provide a rhythm accompaniment synchronized to the performance of the instrument. Information encoded on the digital track automatically disconnects the rhythm instrument during playback and connects the audio channel of the tape player to the reproducing system.

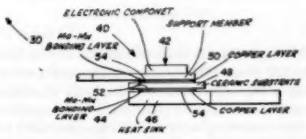
3,829,598
COPPER HEAT SINKS FOR ELECTRONIC DEVICES AND METHOD OF MAKING SAME

James R. Darnell, Dallas, Tex., assignor to Hutson Industries, Inc., Dallas, Tex.

Filed Sept. 25, 1972, Ser. No. 292,162

Int. Cl. H01b *7/34*

U.S. Cl. 174—15 R **1 Claim**



A copper layer is fabricated according to a method including the initial step of forming a molybdenum-manganese bonding layer. Thereafter a layer containing copper oxide or copper is formed on the bonding layer. If copper oxide is utilized, the substrate is then air dried and heated in a reducing at-

mosphere to transform the copper oxide layer into elemental copper. The elemental copper layer, whether formed by the reduction of copper oxide or direct application of particulate copper, is then sintered or fused to form a dense coherent structure. In one embodiment of the invention, the copper layer is utilized to bond a metal heat sink member to an electronic component mounting member. In another embodiment of the invention, the copper layer is utilized as a high conductivity lead in an electronic device.

3,829,599

DEVICE FOR INSTALLING A HOUSING OR CASE

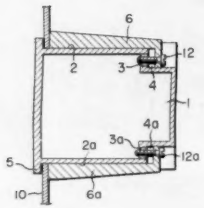
Katsuichi Fujioka, Tokyo, Japan, assignor to Koyo Electronics Industry Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1973, Ser. No. 338,387

Claims priority, application Japan, Mar. 18, 1972, 47-32962

Int. Cl. H05k *5/02*

U.S. Cl. 174—48 **1 Claim**



The present invention relates to a device for readily and securely installing, on an automatic control board, a panel or the like a case or housing herein termed a "housingcase" enclosing electronic instrument parts such as a timer, non-contact relay, counter and so on.

3,829,600

JOINT FOR ELECTRIC CABLES HAVING CONDUCTOR INSULATED WITH AN EXTRUDED DIELECTRIC

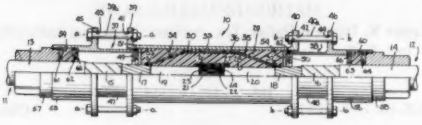
Giovanni Portinari, Sesto San Giovanni, and Adriano Zagarella, Milan, both of Italy, assignors to Industrie Pirelli Societe per Azioni, Milan, Italy

Filed Oct. 25, 1973, Ser. No. 409,763

Claims priority, application Italy, Nov. 16, 1972, 31714/72

Int. Cl. H02g *15/08*

U.S. Cl. 174—73 R **12 Claims**



A joint for joining the ends of electric cables having insulation extruded over the conductor thereof and a screening layer around the insulation in which an elastomeric sleeve with a stress screen therein surrounds and engages the insulation and the screening layer at the opposite sides of the bared and connected conductor ends and such ends and is compressed axially to cause it to expand radially and press against the insulation thereby expelling air from between the sleeve and the insulation. At least the end portions of the stress screen are conductively connected to the screening layer. The sleeve includes a further stress screen on the internal wall thereof which surrounds the connected conductor ends and preferably is supported by a rigid contact element intermediate, and conductively interconnecting, said further screen and the conductor ends. Threaded rings and resilient ring seals seal the joint housing to the cable sheaths to prevent moisture from entering the joint.

3,829,601

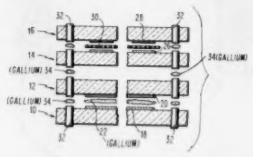
INTERLAYER INTERCONNECTION TECHNIQUE

Dexter A. Jeannotte, Clinton Corners, and Alfred H. Johnson, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 189,416, Oct. 14, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,483

Int. Cl. H05k *3/36*

U.S. Cl. 174—68.5 **11 Claims**



An interconnection substrate for electrical circuits comprising a plurality of planar conductive metallized patterns disposed between alternating layers of a dielectric medium, and substantially normal thereto electrically conductive paths extending between at least some of said conductive metallized patterns. Diffused metallurgical bond interfaces provide mechanical and electrical connection between the conductive metallized patterns and paths.

3,829,602

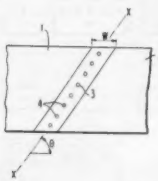
LAMINATED SHIELD TAPE FOR CABLE AND LAMINATE SHEATHED CABLE FORMED BY USING THE LAMINATED SHIELD TAPE

Hisao Ishikawa, and Terutsugu Kawabata, all of Tokyo, Japan, assignors to Fujikura Cable Works Ltd., Tokyo, Japan

Filed Jan. 4, 1973, Ser. No. 321,096

Int. Cl. H01b *7/18*

U.S. Cl. 174—102 R **16 Claims**



A laminated tape for shielding cable composed of at least two metallic strips which have been connected to each other by welding at the end portions in the longitudinal direction and a plastic film coated on at least one surface of the metallic strip, the width of the overlapped or abutting weld portion of the ends of the metallic strips being less than about 10mm., the interval of the weld points formed in the overlapped or abutting portion by welding being less than about 5 mm., and the angle of the weld line to the longitudinal direction of the metallic strip being in a range of about 30° to about 80°. A laminate sheathed cable formed using the laminate shield tape.

3,829,603

POWER CABLE WITH GROUNDING CONDUCTORS

Theodore E. Hansen, and Thomas M. Moran, both of Marion, Ind., assignors to The Anaconda Company, New York, N.Y.

Filed Apr. 26, 1973, Ser. No. 354,813
Int. Cl. H01b 7/18, 9/02
U.S. Cl. 174—115 6 Claims

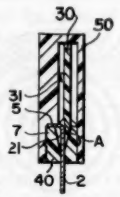
A power cable with uninsulated grounding conductors in the interstices between the insulated conductors has a helical winding of grounding wires. The grounding conductors are urged into contact with the helical wires by beddings of resilient filler material.

3,829,604

ENCASED MICRO-CIRCUIT AND THE PROCESS FOR MANUFACTURING THE SAME

Kunihiro Tanaka, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed Apr. 10, 1973, Ser. No. 349,859
Claims priority, application Japan, Apr. 13, 1972, 47-44231
Int. Cl. H05k 5/00
U.S. Cl. 174—52 S 3 Claims



One or more leads are bonded to electrodes on a circuit board. Each lead has a first upstanding portion that extends away from a principal surface of the board and a second portion that extends parallel to that principal surface. The second portions are inserted through apertures in a block which is then inserted in an open ended case having a stair formed in its interior with the first portion of each lead clamped between the stair and a surface of the block.

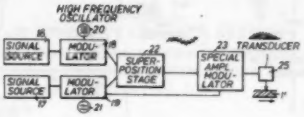
3,829,605

CARRIER AND METHOD FOR RECORDING A SIGNAL THEREON

Gerhard Dickopp, Berlin, Germany, assignor to Ted Bildplatten Aktiengesellschaft, Zug, Switzerland

Filed July 20, 1972, Ser. No. 273,645
Claims priority, application Germany, July 20, 1971, 2136897; July 20, 1971, 7128351
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 CD 11 Claims

An improved recording carrier of the type wherein the signals are recorded in the form of depressable raised portions of the surface thereof which are played back by means of pressure scanning and which has a signal recorded thereon which results in variable heights for the raised portions along the scanning path corresponding to an envelope function of the recorded signal. The raised portions are such that the distances of the base planes thereof from a reference plane disposed perpendicular to the extent of the heights of the raised portions along the scanning path vary according to one of the envelope functions of the recorded signal while the peaks of the raised portions lie substantially in a single peak plane which is parallel to the reference plane. A number of alternative methods for modifying the signal to be recorded so as to produce the desired record are also disclosed.

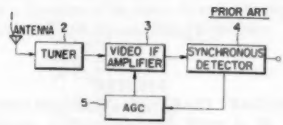


3,829,606

STABILIZING DEVICE FOR THE SYNCHRONOUS DETECTOR OF AN AGC VIDEO FEEDBACK LOOP

Yukio Kawamata; Keisuke Yamamoto, both of Ibaragi, and Namio Yamaguchi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka-fu, Japan

Filed Jan. 11, 1973, Ser. No. 322,769
Int. Cl. H04m 5/60
U.S. Cl. 178—5.8 R 4 Claims



A clipping circuit is interconnected between the output terminal of a video IF amplifier and the input terminal of a synchronous detector so that when the IF signal output exceeds a predetermined permissible input voltage to be applied to the synchronous detector, the IF signal output is clipped in amplitude so as not to exceed the permissible input voltage.

3,829,607

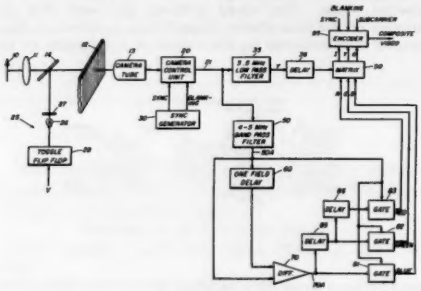
SINGLE TUBE COLOR CAMERA SYSTEM AND METHOD

Renville H. McMann, New Canaan, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed May 24, 1973, Ser. No. 363,533
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST 18 Claims

A single tube color television camera system for producing coherent color video signals representative of the color content of a scene. A filter is disposed in the optical path of the scene, the filter having an array of colored areas thereon. Means are provided for electronically raster scanning the image projected through the filter and for generating color signals representative of the filtered image. Means are also provided for periodically projecting a uniformly colored field on the filter in conjunction with the scene. Further means, including a delay, are provided for receiving the generated color signal and developing a difference signal as between color signals generated during successive periods when the uniformly colored field is present and absent. Finally, means are provided for demodulating the generated color signal with

the difference signal. In one embodiment of the invention the uniformly colored field is projected during alternate fields of



video information. In another embodiment of the invention, the uniformly colored field is projected during successive lines of each field of video information.

3,829,608

DEVICE FOR RECORDING IMAGES WITH SIGNAL LEVEL BEING MAINTAINED FOR ONE LINE PERIOD

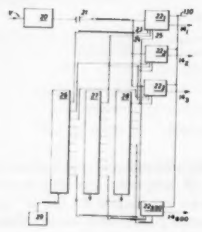
Francois Paul Pietermaat, Leuven; Andre Peytier, Kessel-Lo, and Walter Berckmans, Mechelen, all of Belgium, assignors to AGFA Gevaert N.V., Mortsel, Belgium

Filed Oct. 29, 1971, Ser. No. 193,928

Claims priority, application Great Britain, Oct. 30, 1970, 51779/70

Int. Cl. H04n *5/80*; **G03g** *15/04*

U.S. Cl. 178—6.6 A **7 Claims**



A method of recording an electrostatic charge pattern on an insulating layer. The method comprises the steps of scanning a pattern line-wise to produce an electric signal which is composed of a multiplicity of distinct electric signals determined by successively scanned portions of the pattern. The distinct electrical signals are applied to different places of the insulating layer during a period which is greater than the corresponding period during which the corresponding area of the pattern is being scanned. The charge pattern on the insulating layer is developed in a known way to produce a visible image.

3,829,609

IMAGE-SPLITTING DEVICES FOR SIZING INSTRUMENTS

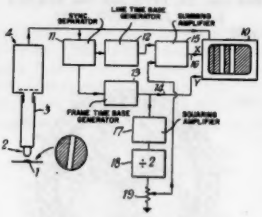
Bryan Oliver Payne, York, England, assignor to Vickers Limited, London, England

Filed Nov. 22, 1972, Ser. No. 308,698

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **13 Claims**

An image-splitting device for a sizing instrument comprises a television camera unit for receiving an optical image, of an object to be sized, formed by means of a microscope objective, and producing from that image a video signal representative thereof. Electrical circuitry is connected to receive the video signal and to produce therefrom, on a television display



unit, a pair of images which are each representative of the optical image and are not of mutually reversed contrast. The pair of images are displaced in relation to one another across the image surface of the television display unit by a distance which can be varied selectively for sizing purposes.

3,829,610

APPARATUS FOR SIMULTANEOUS REPRODUCTION OF VISIBLE AND AUDIBLE INFORMATION

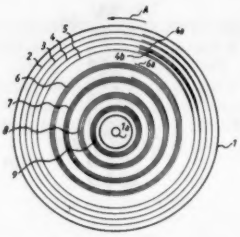
Louis Achilles Meeussen, Moertsel/Antwerpen, Belgium; Friedrich Bestenreiner, Grunwald, and Hans-Peter Huber, Munich, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 23, 1972, Ser. No. 256,095

Claims priority, application Germany, May 26, 1971, 2126075

Int. Cl. H04n *5/76*

U.S. Cl. 178—6.6 A **20 Claims**

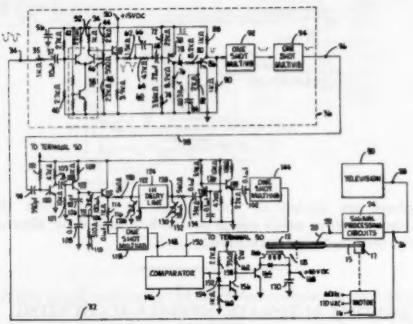


Apparatus for simultaneous reproduction of audible and visible information employs a rotary disk having several concentric tracks of recorded visible information and several concentric helical sound grooves or a single helical sound groove with several sound sequences super-imposed upon each other in accordance with the carrier frequency method. The sound reproducing system has one or more sound heads which are movable axially and radially of the disk into register with the outer ends of selected sound grooves or into register with the outer end of the single sound groove. The image reproducing system has one or more heads movable axially and radially of the disk into register with selected tracks. Each such track may consist of a helical groove which can be scanned to reproduce a series of images or an endless groove which can be scanned to reproduce a still image. The endless groove may comprise portions of different optical density, and each head of the image reproducing system then employs a light source which can be trained upon a selected endless groove to emit a light beam which is modified by portions of the scanned endless groove prior to impinging on a photoelectrcic transducer.

3,829,611
DISC PLAYBACK SYSTEM WITH SPEED CONTROL OF A BELT DRIVE

James Conrad Schopp, and Frederick Roland Stave, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1972, Ser. No. 284,509
Int. Cl. H04n *5/76*; **G11b** *17/00*; **H02k** *7/10*
U.S. Cl. 178—6.6 A **8 Claims**

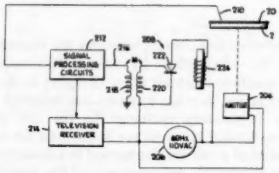


A speed control system for a video disc playback system utilizes a speed change mechanism which permits the speed of the disc turntable to be varied without affecting the speed of the drive motor. A drive belt is coupled in non-slip relation to the disc turntable and the drive motor causing the turntable to rotate and thereby establish a relative motion between a video disc record mounted on the turntable and a pickup device. The free running speed of the turntable is above the normal operating speed required for proper operation of the playback system. A brake mechanism adjusts the speed of rotation of the turntable to control the speed of the relative motion between the disc record and the pickup device. The drive belt is yieldable such that the turntable can be adjusted to have a speed of rotation which is asynchronous with respect to the speed of rotation of the drive motor.

3,829,612
VIDEO DISC PLAYBACK EDDY CURRENT SPEED CONTROL SYSTEM

Billy Wesley Beyers, Jr., Greenfield, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1972, Ser. No. 284,510
Claims priority, application Great Britain, Apr. 19, 1972, 18045/72
Int. Cl. H04n *5/76*; **G11b** *17/00*; **H02k** *7/104*
U.S. Cl. 178—6.6 A **5 Claims**

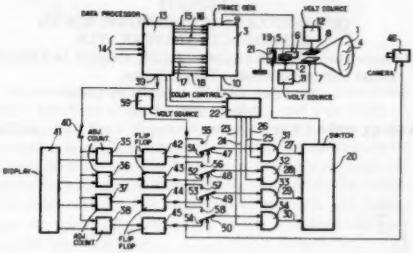


A speed control system is provided for a video disc playback system. A motor is mechanically coupled to a conductive turntable and drives the turntable to rotate and thereby establish a relative motion between a video disc record mounted on the turntable and a pickup device. The free running speed of the turntable is above the normal operating speed required for proper operation of the playback system. An error signal representative of the speed of the relative motion between the disc record and the pickup device is applied to a magnetic field generating structure. The resulting magnetic field establishes eddy currents in the conductive turntable which creates a braking force which tends to oppose the rotation of the turntable.

3,829,613
COLOR INTENSITY CONTROL SYSTEM

Gerard Melchior, Paris, France, assignor to Compagnie Industrielle Des Telecommunications Citalcatel, Paris, France

Int. Cl. H04n *1/24*, *5/84*
U.S. Cl. 178—6.8 **6 Claims**

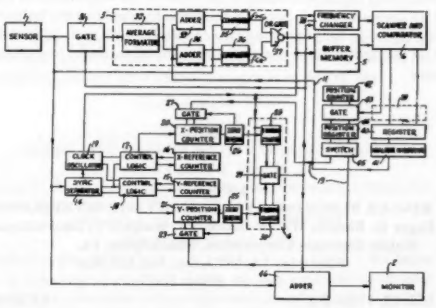


Device for effecting polychromatic traces of light, more particularly on the screen of a polychromatic cathode tube, comprising means for regulating the number of repeats of a same trace as a function of its color, in order to regulate the light flux produced by a trace according to its color.

3,829,614
AUTOMATIC VIDEO CONTRAST TRACKER

Sten H. Ahlbom, Saltsjo-Boo, and Sture J. H. Hansson, Hagersten, both of Sweden, assignors to Saab-Scania Aktiebolag, Linkoping, Sweden

Continuation-in-part of Ser. No. 114,498, Feb. 11, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,814
Claims priority, application Sweden, Feb. 11, 1970, 1747/70
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **4 Claims**



In a video tracker, each scan line is broken into a predetermined number of uniform short segments. An electronic tracking window thus comprises a matrix of data points, each

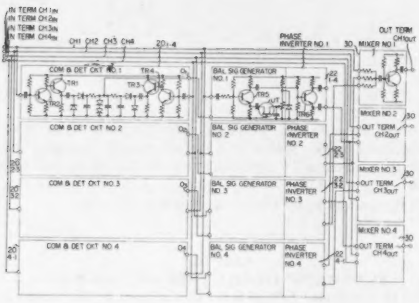
a line segment, and its edges are on coordinates defined by data points. Video signal content of each line segment in the window area is digitized by comparison to automatically adjustable reference level signals and generation of either a "one" or a "zero" bit, depending upon relationship of video signal content to reference levels. For each frame scanned, data points in the window are compored, set by set, with a bit pattern preselected for best correspondence to target configuration, comparisons being made sequentially across and down the window. A correlation number is obtained for each comparison. Location and value of the highest correlation number for each scan is stored and used for tracking.

3,829,615

QUATERNARY STEREOPHONIC SOUND REPRODUCTION APPARATUS

Katsuzo Hiramatsu, Koriyama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1972, Ser. No. 297,031
Int. Cl. H04n *5/00*
U.S. Cl. 179—1 GQ **6 Claims**



A quadraphonic sound reproduction has a apparatus decoder for restoring encoded signals to four signals in four audio channels, and a circuit for comparing the component of the signal in each channel with a leakage component in that channel into which the signal leaks the least to produce a balancing signal according to the ratio of the amplitudes of the two components. A circuit is provided for applying the balancing signal to the remaining two channels to balance out cross-talk components of the signal developed in these two channels.

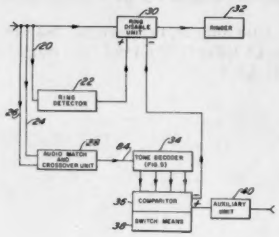
3,829,616

RINGER BLOCKING ATTACHMENT FOR TELEPHONES

Roger D. Blouch, Willow Grove, Pa., assignor to International Mobile Machines Corporation, Philadelphia, Pa.

Filed May 14, 1973, Ser. No. 359,966
Int. Cl. H04m *3/42*
U.S. Cl. 179—2 A **5 Claims**

A system for selectivcly ringing or actuating a telephone bell or any other desirable signal, or for alternatively actuating any functional device such as an alarm system, a timer, a radio, a coffee pot, etc., whereby when a telephone number is called, an auxiliary system automatically cuts in to prevent ringing or other actuation of the telephone bell or other signal device until a predetermined additional number or series of numbers are dialed or touch-toned at which time the telephone bell or other signal device is actuated or, alternatively, the functional device is actuated.

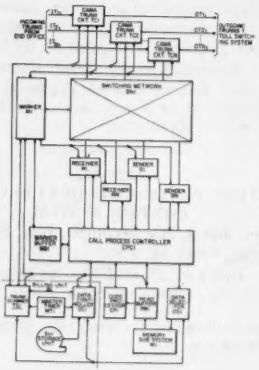


3,829,617

CENTRAL AUTOMATIC MESSAGE ACCOUNTING SYSTEM

George J. Caithamer, Brookfield; Ivan V. Coleman, Naperville, and David K. K. Lee, Chicago, all of Ill., assignors to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Sept. 1, 1972, Ser. No. 285,777
Int. Cl. H04m *15/10*
U.S. Cl. 179—7.1 R **1 Claim**



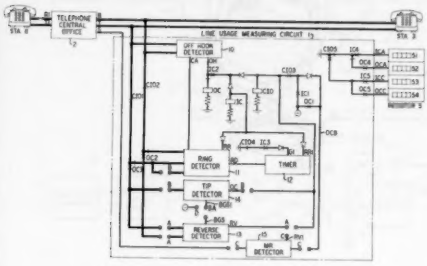
Data on telephonic toll communications are recorded in an automatic toll recording office by means of computers and magnetic tape machines instead of by ticketing in the several originating exchanges. Service junctors are inserted into the path from the originating exchange to the toll switching exchange. These service junctors are monitored for calls, and upon the initiation of a call are connected to a data receiver. A memory area is allotted to the receiver and the initial data on an originating call is placed therein. A processor screens the data, controls the re-sending of the digits to the toll office and stores the information in a billing unit buffer memory. The service junctor is scanned for the duration of the call via a separate path and upon termination of the call another entry is made in the buffer memory. As the buffer memory reaches a predetermined amount of data it is periodically dumped onto the tape.

3,829,618

LINE USAGE MEASURING CIRCUIT

Arthur Cecil Brandon, Denver, Colo., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Apr. 5, 1973, Ser. No. 348,200
Int. Cl. H04m *15/38*
U.S. Cl. 179—8 A 14 Claims



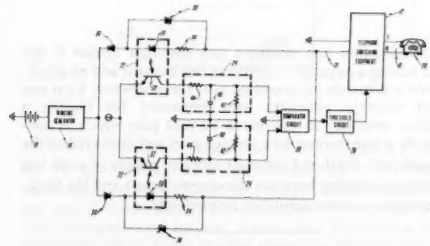
A line usage measuring circuit for determining station usage of a telephone line by recording station incoming and outgoing call attempts and call completions routed through a telephone central office. High impedance off-hook and ring detectors are normally bridged across the telephone line. On station generated calls the off-hook detector registers an outgoing call attempt and functions to enable outgoing call completion apparatus. Reversal of the telephone line and answer signals appearing on a sleeve conductor enables the outgoing call completion apparatus to record completions of outgoing calls. The ring detector records telephone central office ringing signals as incoming call attempts and enables the off-hook detector to subsequently record station off-hook signals occurring within a predetermined time interval after ringing signals as incoming call completions.

3,829,619

TELEPHONE RING TRIP CIRCUIT

Stanley Wayne Close, Penfield; John J. Cordovani, and William E. Shaffer, both of Rochester, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,242
Int. Cl. H04m *3/04*
U.S. Cl. 179—18 HB 6 Claims



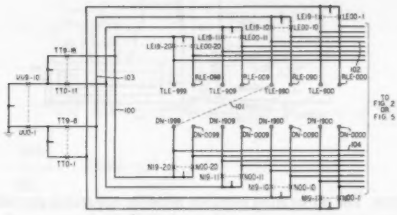
A telephone ring trip circuit utilizes a pair of unidirectional current detectors poled opposite one another in a parallel arrangement which is in series with a ringing path for providing signals proportional to the currents therethrough and a pair of integrating circuits in combination with other circuitry responsive to the signals for generating a ring trip control signal when DC current flows through the path upon answering of the call.

3,829,620

BI-DIRECTIONAL TRANSLATOR

Arthur John Ehlschlager, Columbus, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed July 13, 1973, Ser. No. 379,060
Int. Cl. H04q *3/47*
U.S. Cl. 179—18 ET 15 Claims



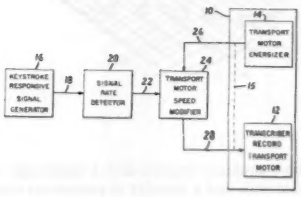
A bi-directional translator is disclosed for translating directory numbers to equipment numbers and vice versa. A single relay tree has a directory number input and an equipment number input. Separate output circuits for the translated equipment number and the translated directory number are connected by a single cross connection to associate the equipment number with the directory number of a line. The output circuits are selectively connected to the tree depending on which input circuit is used.

3,829,621

RECORD TRANSCRIBER ADAPTIVELY RESPONSIVE TO TYPING ACTIVITY

David A. Goldman, Croton Heights Rd., Box 69, RFD 1, Yorktown Heights, N.Y.

Filed May 3, 1972, Ser. No. 249,902
Int. Cl. G11b *15/18*
U.S. Cl. 179—100.1 R 18 Claims



A record transcriber which relieves a typist of the need to stop and restart record transport includes a control system for modifying record drive speed in response to typing rate.

3,829,622

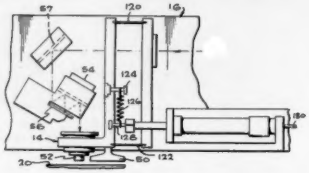
VIDEO DISC PLAYER WITH VARIABLY BIASED PNEUMATIC HEAD

James E. Elliot, Los Angeles, Calif., assignor to MCA Disco-Vision, Inc., Universal City, Calif.

Filed Oct. 24, 1972, Ser. No. 299,893
Int. Cl. G11b *5/60, 7/08*
U.S. Cl. 179—100.3 V 4 Claims

A video signal playback device derives video signals from a track on a video disc using a light source and an optical path to a lens system which is supported by an air bearing at a predetermined spacing from the surface of the disc. The optical path includes a mirror which is articulated for rotational motion about an axis which shifts the point of impingement of the transmitted light beam upon the disc in the radial

direction. The returned beam is directed to a single photosensitive pick-up which, provides input signals to a circuit which generates a "fine" servo control signal to drive the articulated



mirror. The air bearing member includes apparatus providing a bias force that varies with the radial displacement of the transducer assembly relative to the disc center.

3,829,623

PLANAR VOICE COIL LOUDSPEAKER

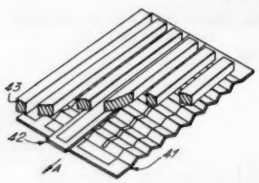
John Robert Willis, Shipley, and David Ian Urquhart-Pullen, Keighley, both of England, assignors to The Rank Organisation, Limited, London, England

Filed May 8, 1972, Ser. No. 251,388

Claims priority, application Great Britain, May 7, 1971, 13746/71; July 30, 1971, 36060/71

Int. Cl. H04r *9/00*

U.S. Cl. 179—115.5 PV **10 Claims**



An audio-transducer incorporates a diaphragm carrying a current conductor and a plurality of permanent magnets constituting a magnet unit disposed in spaced relationship to the conductor. The magnets are formed of a material consisting of magnetizable particles embedded in a matrix of non-magnetic material. The diaphragm may be curved and/or corrugated.

3,829,624

HEADSET AND METHOD OF MAKING IT

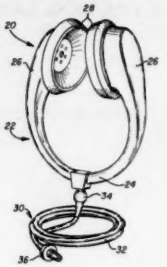
James J. Goodin, and Matthew M. Dowling, both of Oklahoma City, Okla., assignors to Educational Electronics, Inc., Oklahoma City, Okla.

Filed Apr. 2, 1973, Ser. No. 346,953

Int. Cl. H04m *1/05*

U.S. Cl. 179—156 R **15 Claims**

A headset includes a body comprising a chin portion extending to enlarged ear portions. Each ear portion includes an earpad receiving opening defined by an annular rim. An earpad is mounted in each earpad receiving opening of the headset body and comprises an ear engaging layer extending to a cylindrical ear surrounding portion which encloses an annular cushioning member. Each earpad further comprises a retaining portion which encloses an annular retaining member formed from a relatively rigid material. The ear surrounding and retaining portions of each earpad are separated by a



groove which receives the annular rim of one of the earpad receiving openings of the headset body, whereby the earpads are detachably secured to the headset body.

3,829,625

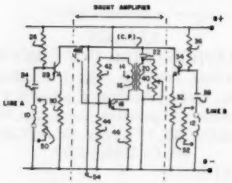
SHUNT NEGATIVE IMPEDANCE AMPLIFIER

Stephen J. Martin, 1777 S. W. 17th, Miami, Fla. 33145

Filed May 15, 1972, Ser. No. 253,458

Int. Cl. H04b *3/36, 3/16*

U.S. Cl. 179—170 G **9 Claims**



A transmission line isolation and amplifier circuit is disclosed having a negative impedance line isolator and an amplifier with a common input/output port therebetween. First and second resistive networks are connected for biasing a transistor amplifier to provide a current gain which is converted by a transformer to a voltage gain and delivered to the common port. First and second capacitor means provide low impedance coupling between the common port and the transformer and transistor amplifier, respectively.

3,829,626

TELEPHONE LINE EQUALIZER

Robert P. Irwin, Huntington, and Alexander Kwartiroff, Sea Cliff, both of N.Y., assignors to Datadyne Corp., Huntington, N.Y.

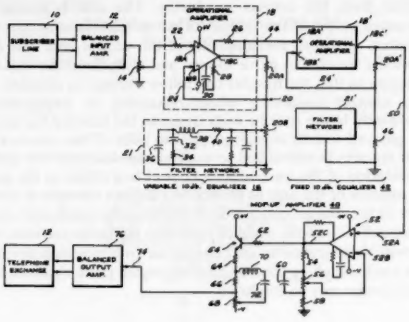
Filed Aug. 14, 1972, Ser. No. 280,738

Int. Cl. H04b *3/36*

U.S. Cl. 179—170 R **9 Claims**

A telephone line equalizer for compensating for the attenuation characteristics of telephone lines of varying attenua-

tions includes an operational amplifier connected in series with a telephone line. Controlling the voltage feedback path of



the amplifier is a filter network having an electrical frequency characteristic substantially the same as the telephone line.

3,829,627

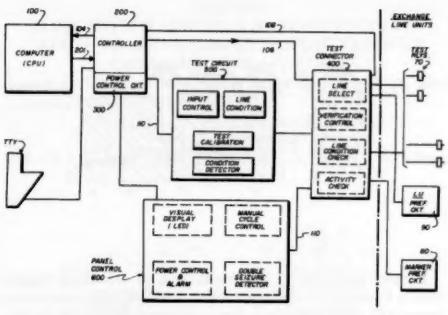
AUTOMATIC LINE INSULATION ROUTINER

Thomas D. Short, and Donald R. Marcum, both of Jackson, Tenn., assignors to International Telephone and Telegraph Coropration, New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,134

Int. Cl. H04m *3/30*

U.S. Cl. 179—175.2 R **9 Claims**



Disclosed is a testing apparatus for automatically routining or testing the lines in a conventional telephone exchange under the control of a small or medium size computer. Lines are tested consecutively by equipment locations with four lines being selected for test at one time. The address of the lines to be tested is sent to a test connector which seizes a test relay associated with the lines to be tested to initiate testing. A series of error checks and verification checks are incorporated into the test procedures to discontinue testing on the sensing of conditions of a serious nature while providing an out put or alarm signal. On sensing conditions of lesser significance, testing is continued with a notation being made of the number of gross errors of the less serious condition. The apparatus, as disclosed, could readily be used for traffic testing of the exchange lines.

3,829,628

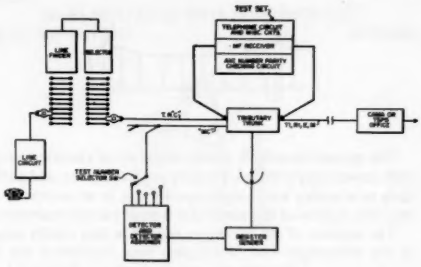
TRUNK CIRCUIT NUMBER PARITY CHECKING

Trifon P. Tripsas, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 26, 1972, Ser. No. 318,318

Int. Cl. H04m *3/22*

U.S. Cl. 179—175.2 R **5 Claims**



A test set circuit is disclosed that is arranged to be connected across a trunk circuit of a tributary office for checking the sending of the calling party identity digits and comparing their value with those programmed in the test set. The digit value is displayed while it is being sent and also its sequential position.

3,829,629

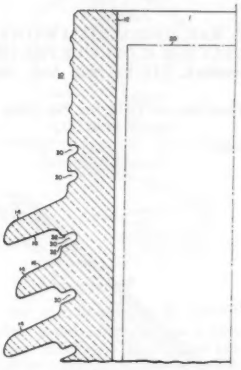
ELECTRICAL INSULATOR HAVING A SPECIAL EXTERNAL SURFACE CONFIGURATION FOR IMPROVED PERFORMANCE IN CONTAMINATED ATMOSPHERES

Tohei Nitta, Hyogo, Japan, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 30, 1973, Ser. No. 383,626

Int. Cl. H01b *17/00, 17/56*

U.S. Cl. 174—212 **4 Claims**



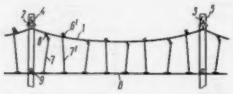
An insulator for electrical equipment of the type having a plurality of sheds extending from a central member is provided with a projecting element, or a groove, located between adjacent sheds for defining points between which occurs a controlled uniform discharge whose inception voltage is low as compared with the inception voltage of the discharge otherwise occurring between opposing shed surfaces or between a shed and the central member.

3,829,630

TROLLEY WIRE SUSPENSION FOR USE IN OVERHEAD CONTACT WIRE SYSTEM OF ELECTRIC TRANSPORT

Igor Alexandrovich Belyaev, 10K, 10, korpus 9, kv. 64 Moscow, U.S.S.R.

Filed Jan. 15, 1973, Ser. No. 323,403
Int. Cl. B60m 1/22
U.S. Cl. 191—41 20 Claims



The present invention relates to the art of electric transport with power supply from stationary power sources, and particularly to a trolley wire suspension for use in an overhead contact wire system of this particular type of electric transport.

The essence of the invention resides in that rigidly secured to the messenger wire of a trolley wire suspension are links made, in one of the embodiments, in the form of rigid rods, are spaced apart along the length of the messenger wire, the adjacent links in a span being arranged on either side of the vertical plane passing through the messenger wire. Connected to the free end of each link are hangers wherefrom the contact element, consisting of one or more trolley wires, is suspended directly, through a supplementary L-shaped link, or a supplementary wire.

As a result, the messenger wire is twisted, under the weight of the contact element, along its full length between each pair of adjacent links. Therewith, use is made of the elastic properties of the messenger wire, regarded here as a stretched string, as well as of its torsion. Besides, use is also made of its internal friction forces.

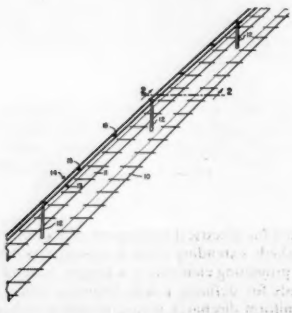
The resulting trolley wire suspension features equal elasticity at any point in a span, which is essential for use in modern electric transport characterized by high speeds and power of the electric vehicles. Proper use made of the internal friction forces of the messenger wire contributes to mitigating self-induced vibratios. vibrations.

3,829,631

ELECTRIC RAILROAD SYSTEM WITH ELEVATED CONDUCTOR ALONGSIDE THE TRACK

Robert L. Retallack, 510 Fairfield Ave., Ridgewood, N.J. 07450

Filed May 18, 1972, Ser. No. 254,616
Int. Cl. B60l 5/12
U.S. Cl. 191—66 12 Claims



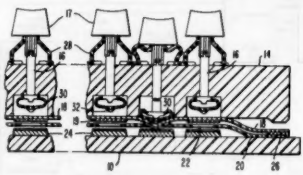
In this electric railroad system, the elevated contact conductor is mounted primarily alongside the track, with sections extending over the track and then back alongside the track at grade crossings, railraod crossings, switch locations, transition locations where the conductor is transferred to the opposite side of the track, etc. The electrically-powered vehicle has an overhead traveler mounted on an extensible arm for obtaining power from the contact conductor. The arm is pivotally mounted on top of the vehicle for movement about an axis of rotation extending longitudinally of the vehicle, and also allows the traveler to move toward and away from the axis of rotation so that the traveler can follow changes in position of the contact conductor while remaining in engagement therewith. In the specific embodiments, the traveler has pairs of grooved wheels engaging opposite sides of the conductor and the arm is articulated to maintain substantially the same orientation of the traveler with respect to a radius to the axis of rotation of the arm as the traveler follows changes in position of the contact conductor. Sections of the conductor over the track may rise to a higher level than alongside sections. At a switching location a fixed conductor frog mounted beyond the track switching point and having angled guide channels for the traveler may be employed.

3,829,632

PROTECTIVE ENVIRONMENT FOR KEYBOARD ACTUATABLE SWITCHES

William G. Klehm, Jr., Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 119,490, March 1, 1971, Pat. No. 3,745,536. This application Mar. 2, 1973, Ser. No. 337,374
Int. Cl. H01h 13/70, 9/04
U.S. Cl. 200—5 A 3 Claims



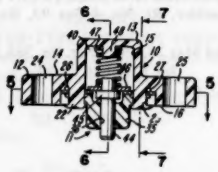
Relates generally to the production of electricial signals from a keyboard, each key of which is individually operatively associated with a switching device whose activation to electrical conductive condition is controlled by the displacement of the key. These switches are hermetically sealed from the atmosphere and are electrically scanned in succession at relatively high speeds and at a repetitious rate such that several scanning cycles occur during the normal activation of a selected key. The keyboard mechanism also includes a shift register having one more bit position than the number of switch devices and into which a bit is introduced into the "one" position at the instant the scan encounters a closed switch of the keyboard. This bit is then shifted through the register in timed relation to the scan of the remaining key switches and unloaded into the last bit position of the register. A detector senses the presence of a bit in both the "one" position and the last position of the shift register and upon detection of a bit solely in the one position it delivers a signal indicative of the character represented by the actuated key and upon detecting bits in the two extreme positions of the shift register it nullifies the delivery of such a signal.

3,829,633

BRIDGING PUSH-BUTTON SWITCH WITH PLASTIC MATING HOUSING PORTIONS

Jerry L. Smith, Springfield, and Frank F. Powling, Bellefontaine, both of Ohio, assignors to Carlisle Corporation, Cincinnati, Ohio

Filed May 2, 1973, Ser. No. 356,584
Int. Cl. H01h 13/04
U.S. Cl. 200—16 A 7 Claims



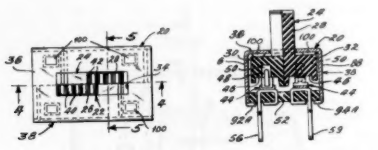
An interlock type switch in which mating housing portions define a closed interior chamber and clamp projecting terminals. A contact member within the chamber is adapted to bridge the terminals which perform dually as terminals and contacts. An actuator has a sliding mount in one of the housing portions and is externally accessible to raise and lower the contact member. Integrated stud means hold the housing portions in an assembled relation and fix the terminals therein.

3,829,634

SLIDE SWITCH ASSEMBLY HAVING PIGGYBACK MULTIPLE ACTUATORS EXTENDING THROUGH COMMON COVER APERTURE

Joseph L. Levasseur, St. Louis, Mo., assignor to H. R. Electronics Company, High Ridge, Mo.

Filed June 25, 1973, Ser. No. 373,413
Int. Cl. H01h 15/00
U.S. Cl. 200—16 R 11 Claims



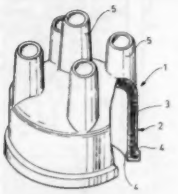
This invention relates to a novel multiple throw switch mechanism including in its preferred form a single switch unit having a combination of several individually movable sliding switch members positioned in side-by-side relationship. More particularly each sliding switch member has one or more contacts mounted thereon for movement relative to one or more fixed contacts located on a non-movable portion of the switch unit. The fixed contacts are positioned to be selectively contacted by the associated movable contacts to establish different combinations of switch conditions in the same switch mechanism.

3,829,635

ELECTRICAL INSULATING ELEMENT SUCH AS A DISTRIBUTOR CAP

Dietmar Elwert, Esslingen, and Gotz Gaege, Neustadt, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 12, 1973, Ser. No. 396,516
Claims priority, application Germany, Sept. 12, 1972, 2244597
Int. Cl. H01r 39/60; H01h 19/06; H01b 3/30
U.S. Cl. 200—19 WG 10 Claims



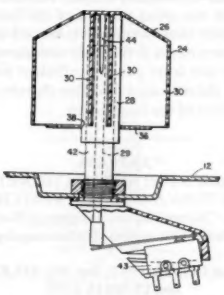
An insulating element, particularly one which is suitable to accommodate a high-voltage component of a combustion engine ignition system, has a peripheral wall which is composed of closed-cell rigid synthetic plastic foam material to the extent of at least 50 percent its weight. Combustion suppressing and/or reinforcing filler substances may be added to the foam material.

3,829,636

OVERFLOW CONTROL DASHPOT-TYPE FLOAT FOR A DISHWASHER SWITCH ASSEMBLY

Eugene W. Scott, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 27, 1973, Ser. No. 336,397
Int. Cl. H01k 7/03
U.S. Cl. 200—34 9 Claims

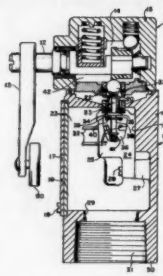


A float for use in a dishwasher to control an externally mounted overflow switch in response to a potential overflow condition existing within the dishwasher tub. The float is loosely mounted on a vertical guidetube on the bottom of the tub and comprises an inverted cup-shaped member having internal partitions to define a plurality of separate chambers, a post-portion telescopically received over the guide-tube, and a rod extending through the guide-tube to abut the switch. Certain of the chambers provide buoyancy to the float while others act in the manner of a dash-pot to stabilize the vertical fluctuations of the float. The post-portion also defines an opening through the wall thereof to prevent a flow path from being maintained in the space between the guide-tube and the post-portion by a syphon effect.

3,829,637
LIMIT SWITCH HAVING MECHANISM TO ELIMINATE UNWANTED REACTIVATION THEREOF

John Augustine Kilcoin, Normal, Ill., assignor to General Electric Company, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,326
Int. Cl. H01h 3/16
U.S. Cl. 200—47 15 Claims

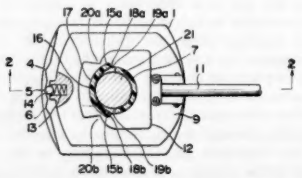


A lever operated rotary limit switch for indicating when a device reaches a limiting position. The switch includes a housing having first and second portions. A motion converter is at least partially enclosed within the first portion of the housing. The converter includes a lever having one end adapted to engage the device which will move the lever, and a shaft assembly which has one portion thereof attached to the other end of the lever and another portion thereof for providing a standard switch motion in a first and a second direction upon a respective activation and deactivation movement of the lever by the device. A switch assembly is enclosed within the interior of the second portion of the housing. The switch assembly has cooperating contacts and means for opening and closing them. Activating means are provided for coupling the standard switch motion of the motion converter to the operating means of the switch assembly. Detent means in the form of a spring loaded ball or similarly shaped member is used to engage a groove in the other portion of the motion converter during deactivation movement in the second direction of the lever so as to prevent the lever from overshooting its zero or neutral position and from gaining sufficient potential energy to swing back in the activated direction thereby causing an unwanted reactivation of the limit switch.

3,829,638
DIRECTION INDICATOR AUTOMATIC RETURN DEVICE FOR TURN INDICATOR SWITCHES

Masaru Suzuki, Chiryu, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-ken, Japan

Filed Dec. 20, 1972, Ser. No. 316,820
Int. Cl. H01h 3/16
U.S. Cl. 200—61.27 3 Claims

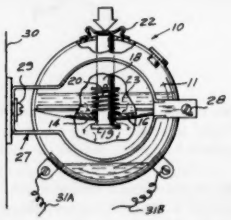


A direction indicator automatic return device in a motor-vehicle direction indicator, wherein a rotary bracket, or element, turns with a steering column is made of synthetic resin, forms a curved portion which passes round the steering column, and has a pair of flexible arms, each of which is supported at one end, and separated by a gap from the curved portion, and each extension arm may be brought into a position where it can be engaged by a restoring cam or rigid engagement projections upon left or right turn indication operation.

3,829,639
LIQUID CONTACT INERTIA SWITCH WITH RESET PLUNGER AND ELECTROLYTE

Richard A. Yanchier, Rt. No. 4 Box 93, Harpersfield, N.Y. 53948

Filed May 23, 1973, Ser. No. 363,183
Int. Cl. H01h 35/02
U.S. Cl. 200—61.47 1 Claim

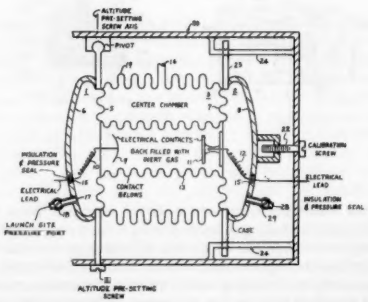


A vessel containing a circuit-closing electrolyte is adjustably attached to a vehicle. Should the vehicle roll over, the electrolyte passes through a diaphragm valve, thereby breaking the circuit from the battery. A plunger valve is provided for returning the electrolyte to the electrode compartment after the vehicle is righted.

3,829,640
DIFFERENTIAL BAROSWITCH

George R. Taylor, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

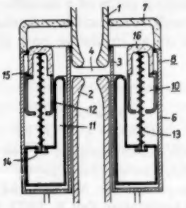
Filed June 3, 1964, Ser. No. 372,427
Int. Cl. H01h 35/34
U.S. Cl. 200—83 N 7 Claims



1. A differential baroswitch comprising:
a first chamber, a second chamber, and a third chamber between the first and second chambers;

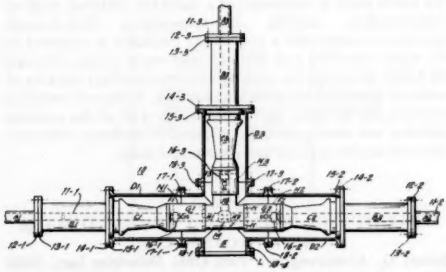
a pressure responsive movable element between the first and second chambers;
a pressure responsive movable element between the second and third chambers;
vent and valve means for opening the first chamber to ambient atmospheric conditions or closing such chamber as desired;
means for sealing the second chamber;
means for venting the third chamber to ambient atmospheric conditions at all times;
sensing means connected to the pressure responsive movable elements to indicate a position of the elements.

3,829,641
PUFFER-TYPE ELECTRIC SWITCH
Karl Zuckler, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munchen, Germany
Filed Jan. 19, 1972, Ser. No. 219,023
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 A **4 Claims**



An electric switch comprises a movable contact and a blast cylinder connected therewith and coacting with a relatively stationary blast piston. The blast piston is supported by a spring and is movable against the action of the spring into a final disconnect position.

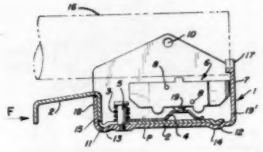
3,829,642
TEE CONNECTION FOR HIGH VOLTAGE, HIGH PRESSURE OIL, PIPE TYPE CABLES
Howard W. Graybill, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.
Filed Feb. 8, 1973, Ser. No. 330,582
Int. Cl. H01h *33/60*
U.S. Cl. 200—148 R **4 Claims**



A tee connection for pipe type cables immersed in oil under pressure. The cable terminations are capped with insulation cones which also serve as the oil seat at the termination. The insulating cones project into a tee enclosure, and the cable terminations are electrically coupled by bus bars arranged in a tee connection. The tee connection is surrounded by an electrostatic shield, and the tee enclosure is filled with a gas (for example, SF_6) under pressure.

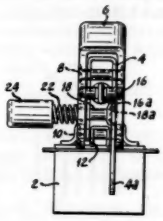
3,829,643
Patent Not Issued For This Number

3,829,644
DUAL ACTION MICROSWITCH ACTUATOR
Ezio Annettoni, Lecco, Italy, assignor to Chemetron Corporation, Chicago, Ill.
Filed Feb. 15, 1973, Ser. No. 332,846
Int. Cl. H01h *25/00*
U.S. Cl. 200—153 T **2 Claims**



An electrical control device generally comprises a body, a micro-switch lodged in the body and attached to the body, and a manually operable control element. The control element can be displaced between first and second displaced positions and is adapted to actuate the micro-switch when displaced to the second displaced position. When displaced to the first displaced position, the control element also can be rotated between first and second rotated positions. The control element is adapted to actuate the micro-switch when rotated to the second rotated position and is biased to said first rotated position.

3,829,645
OFF-LOCKING OVERHANGING TRIGGER SWITCH
Earl T. Piber, Oconomowoc, Wis., assignor to Cutler-Hammer, Inc., Mlwaukee, Wis.
Filed Dec. 18, 1972, Ser. No. 316,343
Int. Cl. H01h *3/20*
U.S. Cl. 200—157 **2 Claims**



A trigger switch for portable tools such as circular saws, chain saws, and the like having a return-spring biased trigger that is actuated by the forefinger of the user to turn the tool on and upon release returns to and locks in off position under spring action. The trigger switch which may be of the inline or pivoted (overhanging) type is provided with a built-in spring biased lock that automatically locks the trigger whenever the trigger returns to its off position. A manual release button is arranged to be depressed by the thumb of the user to release the lock and allow reactuation of the trigger. The lock-off feature is characterized by a strong lock to prevent forcing and

requiring only minimum modification of the conventional trigger switches.

3,829,646

PUSH-BUTTON CONTROL MEMBER WITH PUSH-THROUGH COUPLING

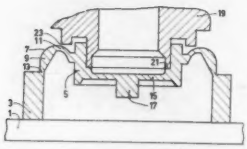
Jean Hubertus Josef Lorteije; Ernst Machiel Schmidt, and Henricus Cornelis Adrianus Van Der Put, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 27, 1973, Ser. No. 336,170

Claims priority, application Netherlands, Mar. 4, 1972, 7202909

Int. Cl. H01h *3/12*

U.S. Cl. 200—159 B **6 Claims**



A control member for a contact device, comprising a first stationary cylinder of elastically compressible material, in which a second cylinder of the same material is coaxially arranged for movement with respect to this first cylinder by means of an elastically compressible annular coupling. The two cylinders and the coupling are constructed to form one integral unit. The coupling comprises a comparatively rigid centre portion which is connected by comparatively flexible portions to the cylinder, and cooperates with a pressure edge provided on the inner cylinder.

3,829,647

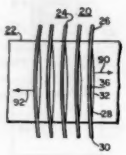
HEAT CONDUCTING FINS FOR BUS BARS AND OTHER ELECTRICAL CONDUCTORS

Charles M. Cleaveland, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 150,004, June 4, 1971, abandoned, which is a division of Ser. No. 4,493, Jan. 21, 1970. This application Sept. 29, 1972, Ser. No. 294,729

Int. Cl. H01h *1/62, 9/52*

U.S. Cl. 200—289 **7 Claims**



A plurality of heat conducting fins disposed on various types of electrical conductors both insulated and uninsulated, and for both high and low voltage applications such as in bus bars, disconnect and knife switches, and circuit breakers. Each of said fins includes a central opening which is slightly smaller in one dimension than the conductor on which the fins are assembled and therefore must be distorted somewhat during assembly on the conductor. The distortion in each fin develops a torsional stress in the fin which causes it to tightly grasp the conductor. In certain high voltage applications, the fin may be insulated or bent over to reduce the effective radial size of the fins in the overall conductor assembly without reducing its surface area and ability to convect heat.

3,829,648

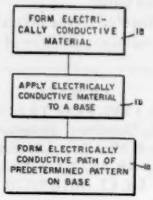
MAKE AND BREAK ELECTRICAL CONTACT

Robert F. Huddleston, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 92,490, Nov. 24, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,558

Int. Cl. H01h *1/02*

U.S. Cl. 200—264 **4 Claims**



Electrical conducting paths of a metallic composite, which includes an electrically conductive material and a refractory metal, are formed on an insulative base in a predetermined pattern.

3,829,649

MICROWAVE OVEN

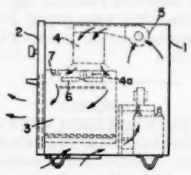
Ryuji Igarashi, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 163,764, July 19, 1971, abandoned. This application Feb. 9, 1973, Ser. No. 331,251

Claims priority, application Japan, July 20, 1970, 45-71747

Int. Cl. H05b *69/06*

U.S. Cl. 219—10.55 **1 Claim**



A microwave oven has a cabinet whose interior is divided by a baffle plate into an upper chamber and a cooking chamber. The baffle plate is composed of a dielectric material, such as polypropylene, capable of transmitting therethrough microwave energy and a microwave oscillator is mounted in the upper chamber and radiates microwave energy through the baffle plate into the cooking chamber to effect cooking of foodstuff placed in the cooking chamber. A thermal switch is mounted on the outer surface of a side wall of the cooking chamber and deenergizes the microwave oscillator when the side wall reaches a predetermined temperature.

3,829,650

APPARATUS FOR INDUCTIVELY HEATING TUBULAR METAL WORKPIECES

Robert G. Armstrong, c/o Park-Ohio Industries Inc., 3800 Harvard Ave., Chardon, Ohio 44105

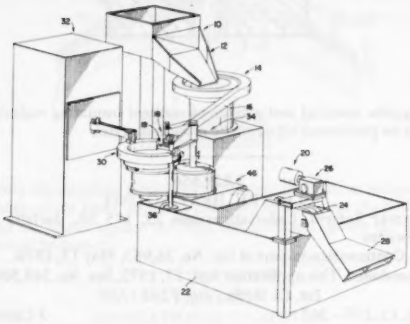
Filed Dec. 12, 1973, Ser. No. 423,978

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.69 **16 Claims**

Apparatus is provided for inductively heating and hardening cartridge casings including a conveyor rotatable step-by-step past a casing input station, through an induction heating tunnel and to an output station from which the casings are discharged into a quenching bath. The conveyor is provided

with a plurality of cartridge casing receiving openings, and the casings extend through the openings for the lower ends thereof to engage a support surface and slide therealong during movement of the conveyor from the input station through the heating tunnel. The supporting surface terminates prior to the output station. Reciprocating plungers having a common



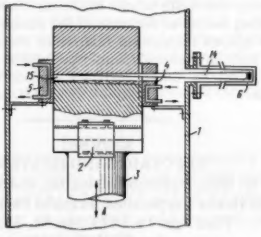
operator are axially aligned with corresponding openings at the input and output stations and are actuated during each dwell of the conveyor to positively displace a casing into a conveyor opening at the input station and to assist the displacement of a heated casing from the conveyor at the output station.

3,829,651

METHOD OF ELECTRON-BEAM WELDING OF THICK PARTS BY VERTICAL AND GIRTH SEAMS

Nikolai Alexandrovich Olshansky, ulitsa Malomoskorskaza 5, k.v. 76; Matvei Yakovlevich Smelyansky, ulitsa Uralskaya, 6, korpus 5 k.v. 107, both of Moscow; Anatoly Petrovich Lopatko, Moskovskoi olasti, ulitsa, Malakhovka Moskovskoi oblasti; Leonid Grigorievich Tkachev, ulitsa Krasny Kazanets, 19 korpus 1, Moscow; Arkady Filippovich Kozhaev, ulitsa Mikhailova, 23, k.v. 3, Moscow; Alexandr Ivanovich Sapozhnikov, ulitsa Mosfilmovskaya, 17/25, Moscow, and Gennady Anatolievich Chernakov, Poselok Selyatino Moskovskoi oblasti, Dom 18, k.v. 30, Moskovskoi oblasti, all of U.S.S.R.

Filed Jan. 13, 1972, Ser. No. 217,590
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EM **4 Claims**



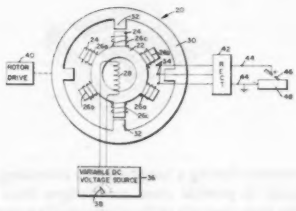
Parts to be welded are interconnected rigidly by a vertical butt joint. An electron beam is directed horizontally and the parts and the electron beam are moved relative to each other. The distance between the surface of the molten metal and the axis of the electron beam, maintained in the course of the welding is from approximately 2 to 2.5 diameters of the electron beam. Welding proceeds at a low accelerating voltage and special seam formers keep liquid metal from flowing out. The seam formers of the device are made as cooled plates with grooves. They are placed at opposite sides of the parts, with the grooves directed along the seam. One of the seam formers has a hole for the passage of the electron beam.

3,829,652

ARC WELDER AND COMBINED AUXILIARY POWER UNIT AND METHOD OF ARC WELDING

Stanley M. Terry, Dayton, Maine assignor to Maremont Corporation, Chicago, Ill.

Filed Jan. 26, 1973, Ser. No. 327,207
Int. Cl. H02k *17/42*
U.S. Cl. 219—133 **17 Claims**



An arc welder is comprised of an inductor alternator, a variable voltage source for energizing the field of the alternator, a rectifier for rectifying the alterantor output, and an internal combustion engine or electric motor of suitable horsepower for driving the alternator. The welding current of the welder is controlled solely by varying the field excitation, and for various levels of field excitation the open circuit voltage remains substantially constant, the output voltage versus current characteristic is inherently such that within the range of welding voltages the current is substantially constant, and the voltage recovery time from short circuit is extremely rapid, thereby eliminating the need for auxiliary devices such as voltage and current regulators, series reactors and/or load control resistors. A switch means for selectively connecting the generating windings to the rectifier in either a delta or wye configuration and a voltage regulator may be used to adapt the alternator for use as a 110–120 volt auxiliary power unit. When used for welding, the alternator field is varied over a range of excitation values including values producing overexcitation of the field as compared to ordinary alternator usage. This produces an open circuit output voltage substantially constant and substantially equal to the maximum or peak value of open circuit voltage for which the alternator is designed at a given speed.

3,829,653

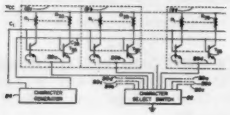
MULTI-CHARACTER ELECTRONIC DISPLAY

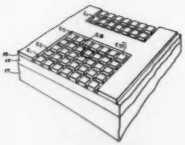
Clifford H. Ensminger, and Edward M. Ruggiero, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 788,261, Dec. 31, 1968, Pat. No. 3,698,012. This application Jan. 19, 1971, Ser. No. 107,831
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 **6 Claims**

Disclosed are multiple character electronic display devices utilizing plurality of character matrices, each of which includes plurality of thermally isolated semiconductor mesas which are heated by current passed through a resistance. The current in each mesa is controlled by a transistor formed therein, and such transistors may have a common collector voltage and a common emitter voltage supply lead which may be individually closed by a switch to enable a desired character. The bases of the transistors of corresponding mesas in all of the character matrices may be connected to common control lines to that all character matrices may be controlled by the same character generator.

A particular diffusion pattern for the individual elements of the matrices is also disclosed which utilizes an extended col-





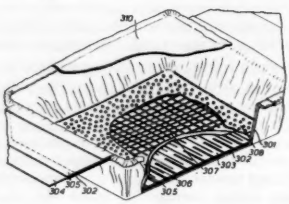
lector transistor having a longitudinally extending, double diffused tunnel to provide cross connections from the control lines to the base contacts of the elements of an array.

3,829,654

ELECTRICALLY HEATED PACKAGE

Paul Eisler, 57 Exeter Rd., London N.W. 2 1YB, England

Division of Ser. No. 122,495, March 9, 1971, which is a continuation of Ser. No. 607,601, Dec. 30, 1966, Pat. No. 3,751,629, which is a continuation-in-part of Ser. No. 301,488, Aug. 12, 1963, Pat. No. 3,296,415, which is a continuation-in-part of Ser. No. 749,554, July 18, 1958, Pat. No. 3,100,711.
This application May 23, 1973, Ser. No. 363,263
Int. Cl. F27d *11/02*; H05b *3/34*
U.S. Cl. 219—386 9 Claims



A dispensible container constructed for a single use incorporates a thin low voltage heating film with terminals accessible from outside and opening means permitting access to its contents is used as a package for a substance adapted to be heated and plastic in the sense of being sufficiently mobile to be removed from the container as soon as it has been sufficiently heated. The outer portion of the package may comprise means for directing most of the heat inside the package to heat the substance and its side walls may be stiffened by a stiff frame of light weight material of the stressed skin type.

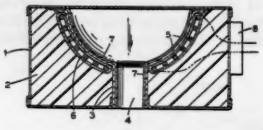
3,829,655

ELECTRICAL HEATING ENVELOPES

Jacques P. Thibault, 24, av. Theophile Gautier, 75 Paris 16 eme, France

Division of Ser. No. 157,551, June 28, 1971, Pat. No. 3,772,500. This application Oct. 4, 1973, Ser. No. 403,433
Int. Cl. H05b *3/58*
U.S. Cl. 219—535 5 Claims

An electrical heating envelope which includes a metallic layer interposed between a vessel, the contants of which are to be heated, and the heating elements which supply the thermal energy. The metallic layer will typically be comprised of non-



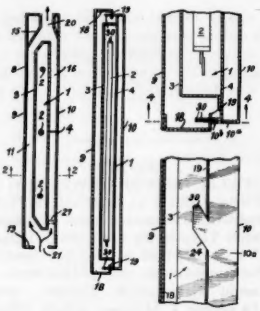
magnetic material and a layer of resilient insulating material may be positioned between the plate and vessel.

3,829,656

ELECTRIC HEATING UNIT

Ingemar Temrin, Ladersattravagen 23, 175 70,, Jarfalla 2, Sweden

Continuation-in-part of Ser. No. 36,963, May 13, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,506
Int. Cl. H05b *1/00*; F24d *13/00*
U.S. Cl. 219—367 3 Claims



An electric heating unit includes an inner casing containing a plurality of heating rods. An outer casing comprising interlocked front and back panels surrounds the inner casing in spaced relation thereto to define front and rear air channels between the panels and the casing the panels are so shaped as to cause the air channels to merge at the top and bottom of the unit and communicate with an upper air outlet opening and a lower air inlet opening. At least one of the openings is of approximately the width of one of the air channels. Mechanical interlocking means at the ends of the panels hold them in the required spaced disposition relative to the inner casing. The heating rods are entirely enclosed within the inner casing whereby dust or other particles cannot come in contact therewith.

3,829,657

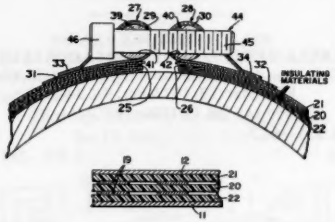
ELECTRIC BAND HEATERS

Edward W. Hinz, Hoffman Estates, Ill., assignor to Tempco Industrial Heater Corporation, Franklin Park, Ill.

Filed Apr. 19, 1973, Ser. No. 352,577
Int. Cl. H05b *3/58*
U.S. Cl. 219—535 6 Claims

Electric band heaters wherein a heater includes resistance wire wound on an insulating strip sandwiched between two other insulating strips, the heater being sandwiched between an open strap and an open band which is engageable with a peripheral surface to be heated. Sheet metal loop brackets are spot-welded to the opposite ends of the strap and a headed screw extends through a rod in one bracket and is threaded into a rod in the other bracket for tensioning the strap. Folded

over side and end portions of the band engage outer and inner surface portions of the strap to connect the strap and the band for installation together and to provide a sealed connection



while allowing free tensioning movement of the strap independently of the band, to tightly press the strap against the heater and the heater against the band and the band against the surface to be heated.

3,829,658

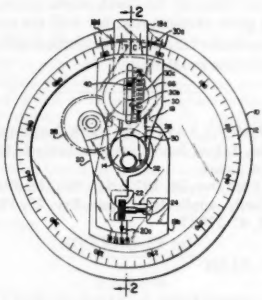
NAVIGATIONAL COMPUTER

Stanley Newman, 65 Noble Ave., Milford, Conn. 06460

Filed Aug. 24, 1973, Ser. No. 391,132

Int. Cl. G06c *27/00*; **G06g** *1/08*

U.S. Cl. 235—61 NV **10 Claims**



An outer annular reference scale defines 360° of angular orientation, and two cursors are rotatably mounted coaxially in centered relationship with respect to the annular scale, each cursor including an index which can be aligned with any particular angle of orientation. An eccentric wind vector device is slidably and rotatably mounted on one of the cursors and a projecting pin which is slidably received in a slot in the other of said cursors. Gear means is provided on the annular scale and on the wind vector eccentric device to rotate these members in such a way that a vector triangle defined thereby changes its configuration continuously and automatically.

3,829,659

SYSTEM FOR COMPENSATING LINE-OF-SIGHT FROM STABILIZED PLATFORM AGAINST MISDIRECTION CAUSED BY LATERAL LINEAR ACCELERATIONS

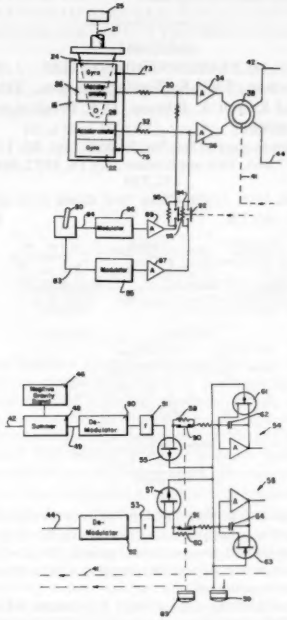
Maier Margolis, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 119,641, March 1, 1971, abandoned. This application Nov. 24, 1972, Ser. No. 309,019

Int. Cl. G06g *7/80*; **B64c** *17/06*

U.S. Cl. 235—61.5 S **3 Claims**

Linear acceleration is detected on a stabilized platform in the platform coordinates by means of accelerometers mounted on the platform. A directable device such as a sight is also mounted on the platform. The sight is directable so that its line-of-sight tracks a target. The acceleration signals are resolved into horizontal and vertical components. Approximate gravity is subtracted from the resolved vertical component so that the resolved signals represent approximately vertical and true horizontal components of linear acceleration in rectangular space. After scaling with respect to the distance



to target, an integrator time integrates these signals to produce angular velocity signals. This information is stored in space coordinates. The stored signals are resolved into the coordinate system of the stabilized platform and are used to drive the stabilized platform. The platform drive is the final integration so the correction angle is produced.

3,829,660

PEN CHART ANALYSER

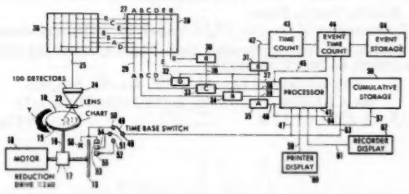
Hermann Ruhl, 40 Advance Rd., Toronto 18, Ontario, Canada

Filed Nov. 16, 1972, Ser. No. 307,138

Claims priority, application Canada, Nov. 19, 1971, 128,143

Int. Cl. G06k *7/14*, *15/20*, *9/06*

U.S. Cl. 235—61.6 A **12 Claims**



The specification sets forth an analyser for retrieving event time information from a multi-channel graphical record sheet, comprising drive means for conveying the sheet past a linear detector device comprising a series of light sensitive elements which generate signal currents proportional to light from the chart. The drive means further includes a pulse generator for

producing time base pulses in proportion to the movement of the chart and representing a predetermined time increment unit. A processor receives signals from the light sensitive devices, correlates these to each other and with the time base pulses transmits these to an output device in accordance with the desired analysis information.

3,829,661

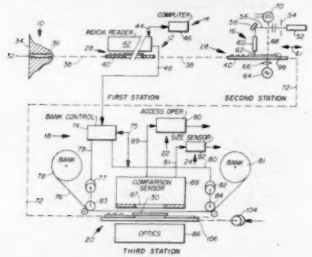
ACCESS CONTROL SYSTEM

Daniel Silverman, 5969 S. Birmingham Ave., Tulsa, Okla. 74105, and Everett A. Johnson, 15 S. Prospect Ave., Park Ridge, Ill. 60068

Continuation-in-part of Ser. No. 74,066, Sept. 21, 1970, Pat. No. 3,677,465. This application July 18, 1972, Ser. No. 272,739

Int. Cl. G06k *1/16, 19/02;* **G06b** *7/04;* **G06k** *7/10;* **G09f** *3/02*

U.S. Cl. 235—61.7 B **13 Claims**



This invention describes a system for access control wherein a control card is presented to a control means. If the control card is authenticated, then access is gained. If it is not authenticated, access is not gained, the control card is retained, and an alarm may be sounded.

The control card contains at least two means; (1) machine readable indicia identifying the card, and (2) a random pattern of micro spots, which pattern is derived (by direct copying — such as by focussed laser beam) from one of a plurality of different patterns, retained in a bank of such micro patterns, each such micro pattern identified by, and selectable in accordance with, different unique indicia, identical with the machine readable indicia on said cards.

In use the control card is introduced into the control means and the indicia are read. Master micro pattern corresponding to the indicia is selected from the bank. The card micro pattern and master micro pattern are compared. If the comparison okay, the card is authenticated.

3,829,662

RECORDING MEDIUM HAVING CONCEALED INFORMATION AS INPUT FOR ELECTRONIC COMPUTER

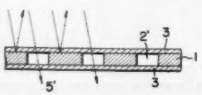
Akira Furahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 27,353, April 10, 1970, abandoned. Claims priority, application Japan, Apr. 17, 1969, 44-29807; 44-29808; 44-29809; 45-35223

This application Oct. 12, 1972, Ser. No. 296,965

Int. Cl. G06k *7/12, 19/06;* **G01n** *21/30;* **H04q** *3/72*

U.S. Cl. 235—61.12 R **9 Claims**



Recording medium uses a base on which a signal or data is recorded. On the base a coating is applied, which is of a material not transmitting the visible rays. For rendering the data marked or punched unintelligible to the human eyes, applying over the punched or marked data a substance which cannot transmit therethrough the visible rays.

3,829,663

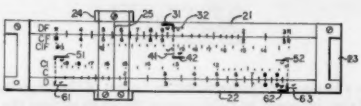
SLIDE RULE WITH DECIMAL POINT LOCATION MEANS

Wendell Y. Huo, 6112 N. Damea Ave., Chicago, Ill. 60645

Filed Mar. 23, 1973, Ser. No. 344,119

Int. Cl. G06c *19/02*

U.S. Cl. 235—64.3 **3 Claims**



A logarithmic scale slide rule having means for readily determining decimal location comprising a system of oppositely-facing base-color and contrast-color brackets enclosing each 1 to 9.9999 scale range, and accompanying base-color and contrast-color check marks to indicate the value of "positive one" for multipliers, or "negative one" for dividers, the base-color and contrast-color check marks being for base-color and contrast-color slider scale numbers, respectively, i.e., conventional black and red scales, said check marks being associated with brackets of the same color, and the sum of the plus and minus values of the check marks encountered in the solution of a given problem together with the sum of the plus and minus decimals of the problem numbers will represent the power of ten for the problem.

3,829,664

NUMERICAL VALUE-RANKING APPARATUS

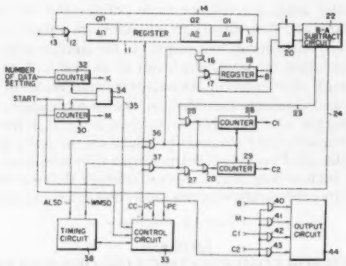
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1972, Ser. No. 318,684

Claims priority, application Japan, Dec. 29, 1971, 46-1452; Mar. 3, 1972, 47-22087

Int. Cl. G06f *7/02*

U.S. Cl. 235—92 SH **5 Claims**



A numerical value-ranking apparatus comprising a first shift register for linearly storing a plurality of input numerical data items whose ranks are to be determined and for circulatingly shifting the data items; and a second shift register for reading out one item of the data stored in the first register and circulatingly shifting said item in synchronization with shifting in the first shift register, wherein the items which are stored in the first shift register and which are not read out to the second register are compared in succession with said one item as a reference by a comparator. The comparator generates an output signal each time there is detected any of the items which has a specific numerical relationship with said reference item;

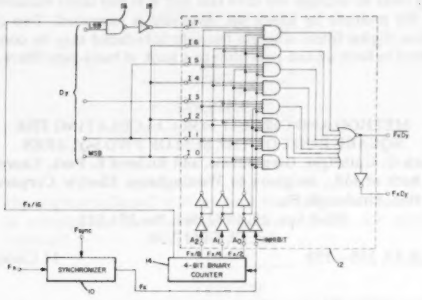
the number of times said output signal is generated is counted by a counting means; and the count thus obtained is indicated or recorded for the ranking of said reference item.

3,829,665

BINARY RATE MULTIPLIER

Adrian R. A. Pocock, Warren, Mich., and Michael A. Cole, Hartford, Conn., assignors to Chandler Evans, Inc., West Hartford, Conn.

Filed Feb. 23, 1973, Ser. No. 334,979
Int. Cl. G06f 15/20, 7/38
U.S. Cl. 235—150.3 1 Claim



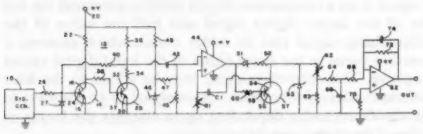
Continuous and direct multiplication of a frequency and a binary number is achieved through the use of a frequency divider and a digital multiplexer. The frequency divider provides a plurality of different frequency signals proportional to a frequency modulated input signal, the different frequency signals being applied as the address inputs to the multiplexer, and the binary number is delivered as the data input to the multiplexer which functions as a data selector to synthesize an output signal having a frequency which corresponds to the frequency of one or more of the signals provided by the frequency divider.

3,829,666

CIRCUIT FOR AUTOMATIC REFERRING OF GAS TURBINE PERFORMANCE PARAMETERS

Rudolph Hohenberg, Trumbull, and Alan R. Duly, Huntington, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed June 26, 1973, Ser. No. 373,699
Int. Cl. G06g 7/70; G01l 5/13
U.S. Cl. 235—151.3 13 Claims



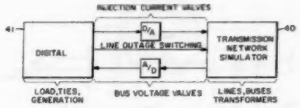
A signal having a frequency proportional to a parameter (power, speed or fuel flow) of a gas turbine engine is "referred" by first developing a square wave of uniform height and width independent of signal magnitude, but having a pulse repetition rate equal to the signal frequency. The area of the square wave is then varied as a function of pressure and temperature to obtain the "referred" parameter in accordance with the transfer function $1/\lambda\sqrt{\theta}$,
where:
$\lambda = P/29.92$ in. Hg.;
$\theta = 460 + TA/518.4$
P = ambient pressure; and
T_A = ambient temperature

3,829,667

HYBRID COMPUTER SYSTEM FOR RAPID GENERATION OF ELECTRIC POWER SYSTEM LOAD-FLOW SOLUTIONS AND TRANSIENT STABILITY ANALYSIS

Norman R. Carlson, Export, and William E. Zitelli, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 255,110
Int. Cl. G06j 1/00; G06f 15/06, 15/56
U.S. Cl. 235—151.21 9 Claims



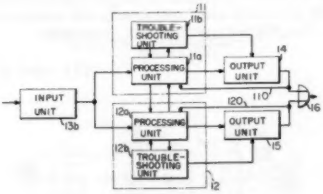
A hybrid loadflow computer arrangement with transient stability analysis capability includes a modularized analog network simulator and a digital computer which acquires and processes on-line data and operator data related to a power system for which loadflow and transient stability problems are being solved. The analog simulator includes modular circuits representative of power systems buses, generators, loads, lines and tie lines interconnected to represent the power system and the interface between the digital computer and the analog network simulator is provided by analog-to-digital and digital-to-analog converters. The hybrid arrangement operates iteratively during the loadflow solution with the analog network simulator providing a bus voltage solution for a set of network simultaneous equations, as well as generator swing angle values for transient stability analysis, and the digital computer providing generator power and voltage magnitude constraints, load admittance values and power constraints, and tie bus voltage and power constraints.

3,829,668

DOUBLE UNIT CONTROL DEVICE

Makoto Noumi, and Susumu Seki, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 1, 1972, Ser. No. 311,143
Claims priority, application Japan, Dec. 2, 1971, 46-97333; Dec. 2, 1971, 46-97334; Dec. 2, 1971, 46-97336
Int. Cl. G06f 11/00, 15/16
U.S. Cl. 235—153 AE 3 Claims



In a double unit control device comprising a pair of information input units, a pair of arithmetical processing units and a pair of output units, each of the arithmetical processing units processes the input information from the corresponding input unit in accordance with a predetermined algorithm, exchanges during the process the intermediate processed result in the processing unit for that of the other processing unit so as to

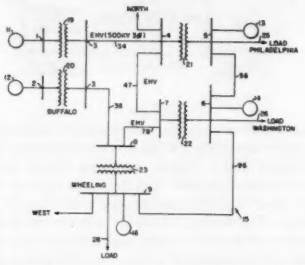
collate them with each other, has a self-diagnosing function diagnosing the fault in the corresponding output unit by obtaining the feedback signal from the output unit, and produces a signal for indicating a fault when the fault is detected.

3,829,669

D.C. ANALOG CALCULATOR FOR RAPIDLY GENERATING ELECTRIC POWER SYSTEM LOADFLOW SOLUTIONS

Paul H. Haley, Pittsburgh, Pa., and Mark K. Enns, Ann Arbor, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 255,111
Int. Cl. G06g 7/62
U.S. Cl. 235—151.21 **6 Claims**



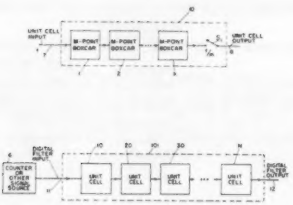
An analog loadflow calculator includes a modularized analog network simulator which includes modular circuits representative of power system buses, lines, generators and loads and interconnected to simulate the power system. The modular generator circuits, load circuits and line circuits provide currents to be summed at appropriate bus circuits. The simulator operates to force observance of current and voltage laws and to provide the bus voltage solution.

3,829,670

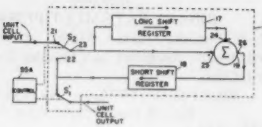
DIGITAL FILTER TO REALIZE EFFICIENTLY THE FILTERING REQUIRED WHEN MULTIPLYING OR DIVIDING THE SAMPLING RATE OF A DIGITAL SIGNAL BY A COMPOSITE INTEGER

Paul L. Kebabian, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 10, 1972, Ser. No. 242,807
Int. Cl. G06f 7/38, 15/34
U.S. Cl. 235—152 **5 Claims**



A digital filter employing a plurality of unit cells connected in cascade. Each unit cell includes a duplicating filter (typically a plurality of boxcar integrators connected in cascade). A switch is connected between the output of each duplicating filter and the output of the unit cell of which it is a part. The switch is operable to reduce the data rate to a sub-multiple of the input data rate to the associated duplicating filter, the submultiple being equal to the parameter R of the duplicating filter, where R is the number of points in the boxcar integrator impulse response when the duplicating filter is composed of boxcar integrators. In another form the switch is placed between the input to the unit cell and the input to the duplicating filter to increase the data rate and R in this latter situation is the multiple by which the data rate is increased. Two or more digital filters wherein the rate is reduced may be combined to form a band-pass filter or a bank of band-pass filters.

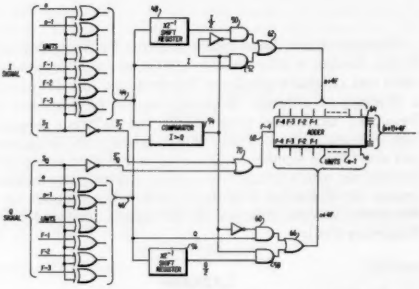


3,829,671

METHOD AND CIRCUIT FOR CALCULATING THE SQUARE ROOT OF THE SUM OF TWO SQUARES

Jack G. Gathright, Glen Burnie, and Richard E. Park, Laurel, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1973, Ser. No. 354,621
Int. Cl. G06f 7/38
U.S. Cl. 235—158 **11 Claims**



An arithmetic logic circuit for performing an algorithm which approximates the square root of the sum of two squares. A novel hardware arrangement and method are disclosed which employ EXCLUSIVE OR circuits instead of a conventional 2's complement arrangement provided by conventional adder-subtractor circuits. The values to be squared are converted to positive value digital signals, compared, and the control signal from a comparison circuit used to command the full value of the larger digital signal and half the value of the smaller digital signal into an adder circuit which receives a correction signal in the event either of the input digital values is negative. The correction signal may be added to the least significant order of the adder output signal or to the next to least significant order depending upon whether the larger or smaller of the digital signals is negative.

3,829,672

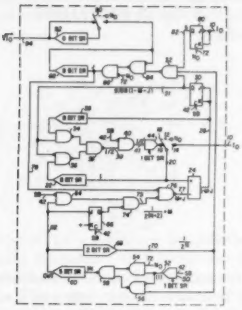
SERIAL BINARY SQUARE ROOT APPARATUS

Delaine C. Sather, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed June 6, 1973, Ser. No. 367,615
Int. Cl. G06f 7/38
U.S. Cl. 235—158 **6 Claims**

Circuitry for examining the individual bits of a radicand of which the square root is to be determined and the resulting remainder produced during the square rooting process. The circuit stores the bits obtained during each step of the opera-

tion and uses the stored information in succeeding steps until a number of steps have occurred equal to the number of bits in



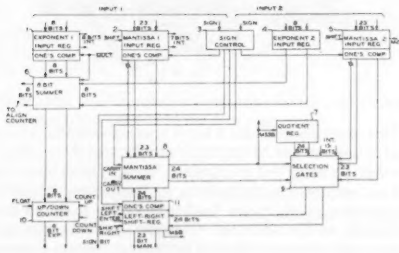
the original radicand at which time the square rooting process is completed. The circuit is operational only for positive radicand.

3,829,673

FLOATING POINT ARITHMETIC UNIT ADAPTED FOR CONVERTING A COMPUTER TO FLOATING POINT ARITHMETIC

Frank M. Bouton, Jr., Maitland, Fla., and Thomas R. Printz, Portland, Oreg., assignors to Floating Point Systems, Inc., Portland, Oreg.

Filed June 20, 1972, Ser. No. 264,518
Int. Cl. G06f 7/50, 7/54
U.S. Cl. 235—164 **15 Claims**



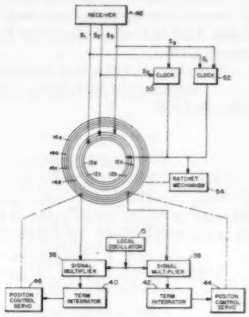
A floating point converter for adapting a conventional computer to floating point arithmetic includes an exponent circuit for receiving the respective floating point exponents and selectively providing the sum, the difference, or the larger of the two. The converter further includes a mantissa circuit for receiving the respective mantissa inputs and applying the same to a computational loop. This loop includes an output shift register, an adder for algebraically adding the contents of the shift register to one of the input mantissas, and gating circuitry for selectively entering the results of addition to said register or alternatively entering the second mantissa input into said register. A quotient register further receives successive most significant bits of successive subtractions occurring during division and subsequently provides a quotient output to said shift register via said gating circuitry.

3,829,674

SLOW MODULATION DISTANCE MEASURING APPARATUS

Horace M. Joseph, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1973, Ser. No. 326,922
Int. Cl. G06g 7/19; G01s 9/24
U.S. Cl. 235—181 **3 Claims**



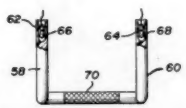
Apparatus for locating a source of slow modulation or intermittent, radiant energy. Transmitted signals are received by a pair of separated, remote receiver stations and at a local station. The signals received at the remote stations are relayed to the local station where each signal is recorded on a separate track after each is normalized to the same average amplitude. The recorded signals are played back on apparatus having a movable head which can be positioned relative to a stationary head while at the same time permitting both to follow high-speed paths at the same angular velocity except for the phase angle difference. The movable head plays back the signal from one of the remote stations and the stationary head plays back the signal from the local station. The instantaneous amplitudes of the two signals are superimposed on each other and multiplied together to form an autocorrelation function. The process is repeated with a different position of the movable head until the average product reaches a maximum value. The maximum value is compared with the square of one of the signal amplitudes averaged over the same time interval, and if the maximum and square are substantially equal the unique correlation is reached when the difference in head position measures the time delay. If a satisfactory match is not obtained, a new area of the recorded signal is searched.

3,829,675

LIGHTING MEANS FOR UNDERWATER ILLUMINATION

Remo Mariani, 966 Quartz Dr., Toms River, N.J. 08753

Filed Apr. 30, 1973, Ser. No. 355,817
Int. Cl. F21
U.S. Cl. 240—1 LP **4 Claims**



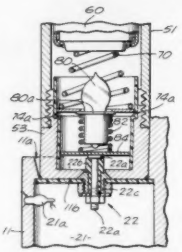
Light rays emanating from a light source within a recess in one end of a solid transparent elongate member are concentrated within and longitudinally conducted along a first portion thereof having a smooth, preferably polished outer surface, and then radiated from the roughened outer surface of a second portion extending longitudinally from the first portion,

to provide directionally controlled selective illumination remote from the light source. Clamp means may be provided to attach the elongate member to the side of a liquid containing vessel such as a swimming pool or aquarium to selectively position the second portion of the elongate member beneath the surface of the liquid to safely illuminate the surrounding area.

3,829,676
RECHARGEABLE FLASHLIGHT

Norman C. Nelson, Newberry Springs, and Daniel C. Harley, Apple Valley, both of Calif., assignors to Kel-Lite Industries, Inc., Barstow, Calif.

Filed Aug. 7, 1973, Ser. No. 386,366
Int. Cl. F21l *1/00*; H02j *7/00*
U.S. Cl. 240—10.6 CH **6 Claims**



A flashlight is provided with batteries that are capable of being recharged, and the flashlight is constructed in such a way that the recharging of the batteries may be accomplished without removing them.

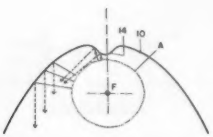
Bulb and reflector means are provided at one end of the battery train, and a normally compressed spring engages the other end of the battery train in order to support the batteries and also carry discharge current flowing from the batteries into the bulb.

Means are also provided for further compressing the spring so as to open up the discharge circuit, providing a pair of inputs for charging the batteries. The mechanism for further compressing the spring, and for connecting the charging circuit to the pair of inputs thus created, is contained within the rearward portion of the flashlight housing.

3,829,677
REFLECTIVE MEANS USED IN CONNECTION WITH FLUORESCENT TUBES OR LAMPS

Mary Duarte DeLlano, Apartado Aereo, Medellin, Colombia (52032)

Filed Nov. 7, 1972, Ser. No. 304,455
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.11 R **3 Claims**

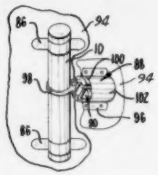


A reflector for a fluorescent tubular light. The reflector is formed by an elongated shell of parabolic cross section. A smaller but also parabolic rib extends lengthwise along the apex of the shell parabola.

3,829,678
APPARATUS FOR ACTIVATING A CHEMILUMINESCENT WAND

Gordon B. Holcombe, 603 Santa Barbara, Millbrae, Calif. 94030

Filed Apr. 13, 1973, Ser. No. 350,946
Int. Cl. F21v *21/00*
U.S. Cl. 240—52 R **9 Claims**

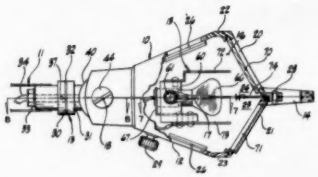


Apparatus for activating a chemiluminescent wand having a first chemical fluid in a flexible tube and a second chemical fluid in a frangible tube within the flexible tube, the apparatus has a first structure formed to retain each end of the wand and a second structure which cooperates with the first structure to displace the center of the wand with reference to the retained ends thereby fracturing the frangible tube in the wand causing the first chemical fluid to mix with the second chemical fluid and generate a chemiluminescence.

3,829,679
LAMP HEAD ASSEMBLY

Gerald L. Rogers, St. Louis, Mo., assignor to Chemetron Corporation, Chicago, Ill.

Filed Aug. 6, 1973, Ser. No. 386,010
Int. Cl. F21v *21/00*
U.S. Cl. 240—52 R **12 Claims**



This assembly includes a lamp housing mounted to a support at one end and having a pair of apertures at the other end providing reading and examination lights. A lamp base is journal mounted within the housing to the housing sidewalls by pivot elements which are fixed to the lamp base and extend outwardly of the sidewalls. Actuating levers are attached to each end of the pivot elements for manual rotation of the lamp base to direct the lamp beam through one or the other of the apertures. The housing is attached to the support by an elbow joint, which permits the angle of elevation of the housing to be adjusted and the support includes a swivel joint which permits the housing to be rotated about its own longitudinal axis.

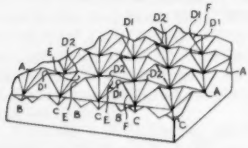
3,829,680
LIGHTING PANEL

Bill F. Jones, Los Angeles, Calif., assignor to J.W. Carroll & Sons, a Division of U.S. Industries Inc., New York, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,098
Int. Cl. F21v *5/02*
U.S. Cl. 240—106 **13 Claims**

A lighting panel for use in overhead lighting fixtures and the like which may readily be fabricated in plastic sheet by extrusion-embossing techniques and which minimizes veiling reflections. The panel contains a continuous pattern of trian-

gular projections, each having three mutually substantially perpendicular surfaces projecting upward for disposition toward the light source. The base lines of the mutually perpendicular surfaces are co-planar and the pattern of projections is such that the base lines of all projections on a panel form continuous straight lines directed in three specific directions. This



allows the fabrication of a relatively inexpensive engraved roller for embossing the pattern on a plastic sheet and results in a light panel which minimizes veiling reflections from the illuminated matter. The panel in accordance with the present invention provides a radial distribution of light with high lighting efficiency and with the maximum light in the area which is 30° to 60° from the vertical.

3,829,681

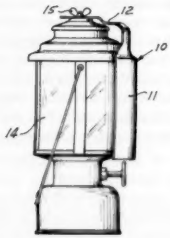
LANTERN SHIELDS

Gary Fuss, 535 Grove St., Mayville, Wis. 53050

Filed May 24, 1973, Ser. No. 363,624

Int. Cl. F21v *1/08*

U.S. Cl. 240—110 **1 Claim**



Two or more shields, rotatably supported at the top of a lantern, is designed for control of the light beam width.

3,829,682

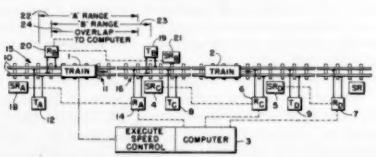
PULSE CODED RAILWAY SIGNAL SYSTEM

Willard L. Geiger, Chagrin Falls, Ohio, assignor to Erico Products, Inc., Solon, Ohio

Continuation-in-part of Ser. No. 105,509, Jan. 11, 1971, Pat. No. 3,740,550. This application Feb. 20, 1973, Ser. No. 333,671 The portion of the term of this patent subsequent to June 19, 1990, has been disclaimed.

Int. Cl. B61l *29/32*

U.S. Cl. 246—125 **12 Claims**



A railway signalling system using coded digital signals impressed on the tracks for direct or computer directed block signal control, the presence of a train on a track section causing shunting of the signals and an indication from a receiver which operates in a fail-safe configuration. in each signal circuit first and second tone oscillators provide carrier signals which are modulated in a specific digital pattern and applied to the tracks. A tone sensitive receiver separately detects the carrier signals and provides pulse train outputs which are decoded in a binary counter and coincidence gate circuit for ascertainment that the correct digital code pattern has been received. Signals are developed for energization of an oscillator, the output of the latter being amplified for direct or computer directed block signal control. More than one signal circuit can be employed on common tracks for separate or overlapping signal control by the selection of different pairs of operating frequencies, readily accommodated by plug-in filter substitution.

3,829,683

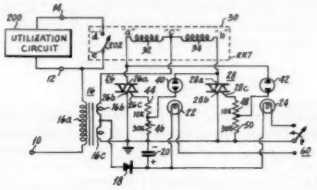
LIGHT CONTROLLABLE ELECTRICAL SWITCH

Donald Charles Long, Yardley, Pa.; Albert Charles Hartsough, Willingboro, and Robert Fincher Sanford, Titusville, both of N.J., assignors to Princeton Electro Dynamics, Inc., Princeton Junction, N.J.

Filed Aug. 22, 1973, Ser. No. 390,532

Int. Cl. H01h *47/24*

U.S. Cl. 250—209 **6 Claims**



An electrical switch which can be remotely controlled to an "ON" or "OFF" state by the use of light energy radiations, but which can also be controlled at the switch location, if desired. The conditioning of the switch is controlled by means of a bistable electromechanical relay and by a pair of silicon controlled rectifiers.

3,829,684

LIQUID CRYSTAL IMAGE CONVERTER SYSTEM RESPONSIVE TO IONIZING RADIATION

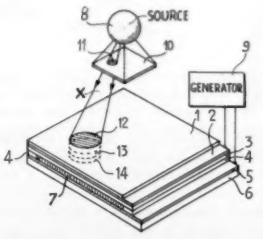
Georges Assouline; Michel Hareng, and Eugene Leiba, all of Paris, France, assignors to Thomson - CSF, Paris, France

Filed Apr. 19, 1973, Ser. No. 352,706

Claims priority, application France, Apr. 25, 1972, 72.14641

Int. Cl. H01j *31/50*

U.S. Cl. 250—213 R **11 Claims**



The invention relates to the display of visible images corresponding to patterns projected by means of ionizing agents

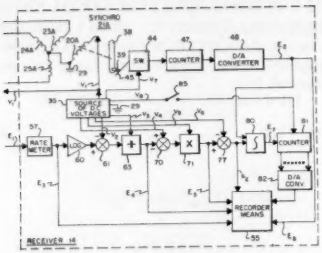
such as X-rays, γ-rays or particle beams. The image converter in accordance with the invention comprises: a fluorescent screen optically coupled to a photoconductive film, the latter being electrically coupled to a liquid crystal film whose dynamic scattering properties are utilised to render visible the patterns projected onto the fluorescent screen by means of the ionizing radiation.

3,829,685

MEANS AND METHOD FOR PROVIDING AN OUTPUT CORRESPONDING TO THE EXPECTED SUBSIDENCE OF A FROZEN EARTH FORMATION

Alexander S. McKay, Calgary, Alberta, Canada, assignor to Texaco Exploration Canada Ltd., Calgary, Alberta, Canada

Filed Oct. 10, 1972, Ser. No. 296,422
Int. Cl. G21k *1/00*
U.S. Cl. 250—256 **8 Claims**



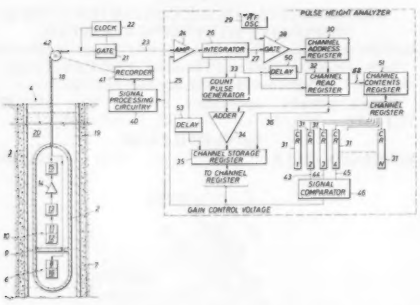
Apparatus including a well logging tool and surface equipment provides an output substantially corresponding to the expected subsidence of a frozen earth formation upon thawing.

3,829,686

PULSED NEUTRON LOGGING SYSTEM WITH GAIN COMPENSATION

Ward E. Schultz; Harry D. Smith, Jr., and Dan M. Arnold, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 181,910, Sept. 20, 1971, abandoned. This application June 28, 1973, Ser. No. 374,449
Int. Cl. G01t *1/18*
U.S. Cl. 250—261 **1 Claim**



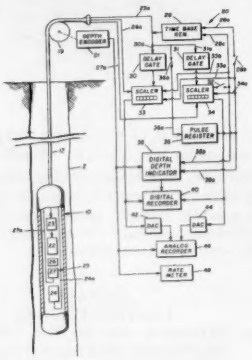
An illustrative embodiment of the invention includes method and apparatus for linearizing the gain of borehole gamma ray energy measurement apparatus. A known energy peak (or peaks) which is prominent in the gamma ray energy spectra of borehole measurements is monitored and any drift in its apparent location in the energy spectrum is used to generate an error voltage. The error voltage is applied in an inverse feedback manner to control the gain of system amplifiers to cancel the drift.

3,829,687

RADIOACTIVE WELL LOGGING TO DISTINGUISH WATER AND HYDROCARBON SATURATION BY DELAYED NEUTRONS FROM OXYGEN

Richard L. Caldwell, Dallas, Tex., assignor to Mobil Oil Corporation, New York City, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,278
Int. Cl. G01v *5/00*
U.S. Cl. 250—269 **8 Claims**



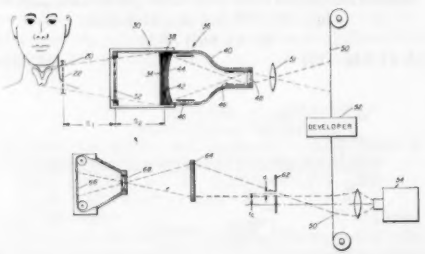
A well logging process for exploring for petroleum hydrocarbons in which subterranean formations are characterized with regard to their hydrocarbon or water saturation on the basis of their oxygen content. The well under investigation is subjected to a porosity logging procedure such as neutron logging, self potential logging, gamma ray scattering density logging, or acoustic velocity logging in order that one or more formations of relatively high porosity may be identified. Such formations are subjected to a delayed neutron logging procedure in which a formation is irradiated with repetitive bursts of fast neutrons spaced by time intervals greater than the time required for dissipation of neutrons originating in the bursts. Between the bursts and after dissipation of the original source neutrons, a detector is operated in order to detect delayed neutrons resulting from the neutron irradiation of oxygen-17. The radiation count thus obtained provides an indication of the oxygen content of the formation.

3,829,688

HIGH INTENSITY RADIATION IMAGING SYSTEM

Harrison H. Barrett, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 4, 1972, Ser. No. 250,224
Int. Cl. G01t *1/00*
U.S. Cl. 250—272 **22 Claims**



A nuclear imaging system for mapping a spatially distributed source of high energy nuclear particles from a living

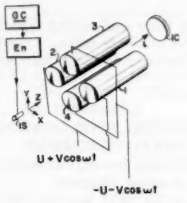
organ which has selectively absorbed a radioactive compound in which the nuclear energy is spatially coded by a zone plate positioned between the source and a spatial detector, and a half tone screen is positioned between the source and the zone plate to increase the definition of the image.

3,829,689

SYSTEM FOR MEASURING AND RECORDING GAS CHROMATOGRAMS AND MASS SPECTRA BY A DIRECT COMBINATION OF A GAS CHROMATOGRAPH AND A QUADRUPOLE MASS SPECTROMETER

Osamu Tsukakoshi, Tokyo, and Masashi Kiriya, Yokohama, both of Japan, assignors to Ulvac Corporation, Chigasaki-shi, Kanagawa-ken, Japan

Filed May 4, 1972, Ser. No. 250,372
Claims priority, application Japan, June 21, 1971, 46-43975
Int. Cl. H01j *39/34*
U.S. Cl. 250—290 **10 Claims**



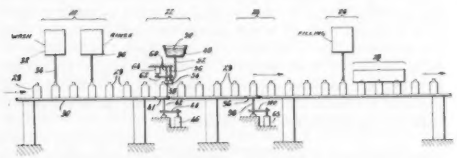
A system for measuring and recording a gas chromatogram and a mass spectrum by a direct combination of a gas chromatograph and a quadrupole mass spectrometer in which the quadrupole mass spectrometer is used as the detector for the gas chromatograph. The two pairs of poles of the quadrupole mass spectrometer are supplied with predetermined radio-frequency voltages of suitable value and appropriate D.C. voltages for improved chromatograms and mass spectra.

3,829,690

METHOD AND APPARATUS FOR THE EXAMINATION OF ARTICLES FOR DEFECTS

Ellery P. Snyder, Green Hill Rd., Norwalk, Conn. 06855

Filed Aug. 29, 1973, Ser. No. 392,724
Int. Cl. G01n *21/16*
U.S. Cl. 250—302 **23 Claims**



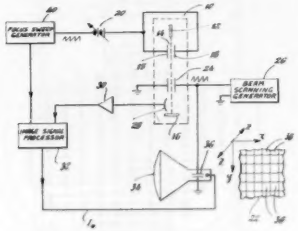
A method for examining the upper part of a glass vessel for defects comprises the steps of applying a fluorescent material to selected surfaces of the upper part of the vessel while inhibiting the introduction of the fluorescent material into voids or defects existing in coated surfaces, irradiating the coated surface with light having a frequency for exciting the fluorescent material, scanning the surface for discontinuities occurring in fluorescent radiation which corresponds to defects in the vessel, and providing an indication of the existence of such a discontinuity. The selected surfaces, in particular, comprise helically formed threads and the top surfaces of screw top beverage bottle. An apparatus in accordance with the invention is provided for effecting the examination of a glass vessel.

3,829,691

IMAGE SIGNAL ENHANCEMENT SYSTEM FOR A SCANNING ELECTRON MICROSCOPE

Robert E. Hufnagel, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sept. 22, 1969, Ser. No. 859,867
Int. Cl. H01j *37/26*; **G01n** *23/00*
U.S. Cl. 250—311 **1 Claim**



The invention pertains to a method and apparatus for reducing the effect of aberrations in an optical or electron-optical system. This is done by varying the focal point over a range and altering the reproduced images to produce a composite image substantially free of the said aberrations.

3,829,692

IMAGE CONVERSION AND AMPLIFYING DEVICE

Dmetro Andrychuk, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

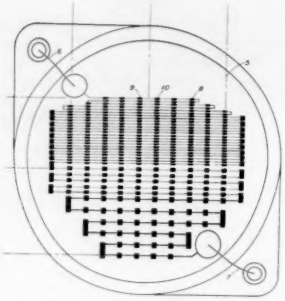
Continuation of Ser. No. 631,513, April 17, 1967, abandoned. This application Apr. 13, 1970, Ser. No. 18,225
Int. Cl. G01j *3/02*
U.S. Cl. 250—330 **8 Claims**

An image forming device comprising a layer of thermochromic material disposed between two electrically conductive layers, one of which is transparent, with a voltage source connected across the two conductive layers. The potential of the voltage source is selected so that when an image carried by a heat producing energy is focused onto the thermochromic material, the excess heat thresholds the thermochromic material to change its color, and the negative resistance of the thermochromic material results in a current flow which tends to amplify and hold the image by increasing and maintaining the temperature above the critical temperature.

3,829,693
DUAL FIELD OF VIEW INTRUSION DETECTOR

Frank Schwarz, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Oct. 3, 1973, Ser. No. 403,228
Int. Cl. G01j *5/12*
U.S. Cl. 250—338 **10 Claims**



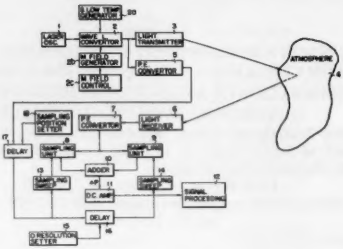
An intrusion detector for detecting movement of bodies radiating in the infrared in a space to be monitored is a combination of an infrared detector such as a thermopile, thermistor, or pyroelectric detector in which a series of all-active thermocouple junctions or pyroelectric detectors connected in opposition is arranged in alignment so that columns of junctions are of alternating polarity, so that an object moving in the space and radiating in the infrared, the image of which moves across the columns, will produce an AC signal which is then amplified and processed electronically to produce an alarm. The electronic circuits, including logic, are well known, and their particular design forms no part of the present invention. Instead of having a single optical system, such as, for example, a germanium lens, imaging the body on the plane of the detector, there are two optical systems, preferably on different focal lengths, one of which images on the front of the detector and the other on the back. The imaging on the back may be reflective, so that intensified images are produced, or it may employ a refracting element for imaging on the back of the detector. In the former case, sensitivity is greatly increased, for example, doubled, and in the second case, which can be used for a detector in long, narrow spaces such as corridors, the sensor can be placed in the middle and will respond to moving bodies on either side of the detector. If it is desired to have a denser coverage of image so that to some extent the spaces between the columns are filled in, in this case the optics is adjusted so that a slightly different field of view is imaged on the back of the detector. This means that a moving object would have to be much smaller or move a lesser distance in order not to strike columns. The sensitivity of course is not increased in such a case.

3,829,694
AN APPARATUS FOR DETECTING GASES OR CORPUSCLES BY LIGHT ABSORPTION AND SCATTERING

Kenya Goto, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 30, 1973, Ser. No. 346,451
Claims priority, application Japan, Mar. 31, 1972, 47-32189
Int. Cl. G03b *27/62*; **G01t** *1/00*
U.S. Cl. 250—339 **1 Claim**

Apparatus for detecting gases or corpuscles is provided with means for transmitting pulse light which is to be absorbed resonantly by gases or corpuscles; means for obtaining an output signal according to the amount of Mie scattering beams of said transmitting pulse light from said gases or corpuscles; and

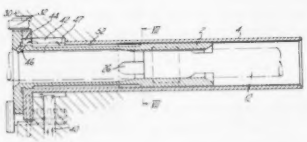


means for detecting from said output signal the amount of resonance absorption involved during a predetermined time period after the transmission of said pulse light.

3,829,695
ROD GUIDE ASSEMBLY FOR CONTINUOUS ROD MAKING MACHINES

Gordon Francis Wellington Powell, London, England, assignor to Molins Limited, London, England

Filed Aug. 24, 1972, Ser. No. 283,297
Claims priority, application Great Britain, Aug. 26, 1971, 40166/71; Aug. 26, 1971, 04167/71; Aug. 26, 1971, 40168/71
Int. Cl. G01t *1/16*
U.S. Cl. 250—358 **12 Claims**



A cigarette making machine has a scanning system for monitoring the weight of the cigarette rod, which is guided in the scanning region by means of a rod guide member formed with windows through which passes the radiation beam used for scanning. Air is blown inwards through the windows to blow out tobacco or other particles which may be caught between the rod and the rod guide member. The rod guide member is removable so that different guide members can be used on cigarettes of various diameters.

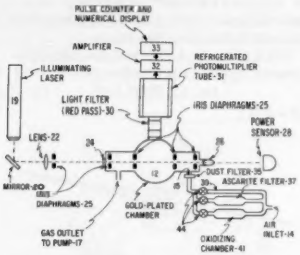
3,829,696
ATMOSPHERIC NO MONITOR

Milton Birnbaum, Palos Verdes Peninsula, Calif., assignor to The Aerospace Corporation, Los Angeles, Calif.

Filed Apr. 26, 1973, Ser. No. 354,471
Int. Cl. G01t *1/20*
U.S. Cl. 250—365 **2 Claims**

Method and apparatus for the continuous, real-time measurement of the nitrogen dioxide (NO_2) content of a gaseous atmosphere. A flowing or non-confined atmospheric sample is subjected to energizing radiation in the broad NO_2 absorption spectrum, preferably between about 400 and 600 nm., with sufficient energy to excite the NO_2 to its fluorescent state. A detector measures the fluorescence in the red band (about 620 nm. to 800 nm.) with lower wavelength radiation, includ-

ing the exciting radiation, being filtered from the detector. The detector output count provides a direct indication of the



NO_2 constituent with an accuracy of 1 part per hundred million or better.

3,829,697

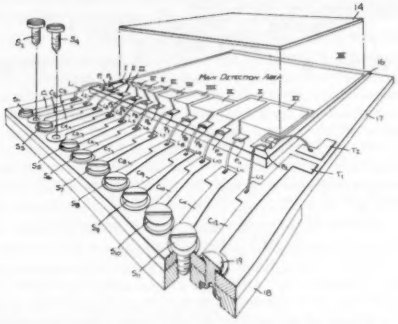
INCREMENTALLY-ADJUSTABLE REGULATOR FOR NUCLEAR PULSE GENERATOR

Dale R. Koehler, Westwood, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed May 18, 1972, Ser. No. 254,476

Int. Cl. G01t *1/15*

U.S. Cl. 250—370 **10 Claims**



A nuclear pulse generator constituted by a source of radioactive material and a solid-state detector for sensing particles emitted by the source to produce corresponding output pulses. In order to regulate the count rate of pulses yielded by the generator, a section of the active detector surface is divided into a series of physically and electrically separated segments, each of which is connected to a common output terminal through a respective switch. By selective electrical connection of the detection segments, one can dictate whether or not the segments are counting. The ratio of the segment areas to each other is a binary number. The area of the smallest segment in the binary series to the total detection area is the desired resolution of the system, whereas the ratio of the sum of the segment areas to the total detection area corresponds to the range of regulation.

3,829,698

X-RAY APPARATUS WITH IMPROVED FILM CASSETTE CLAMPING AND SIZE SENSING MEANS

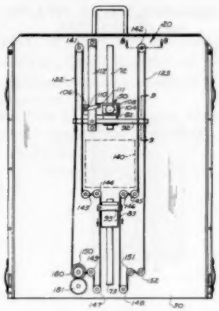
Jerry E. Goetz, Shaker Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Dec. 26, 1972, Ser. No. 318,414

Int. Cl. G03b *41/16*

U.S. Cl. 250—468 **21 Claims**

A pair of clamps interconnected by a pulley and cable system including substantially inextensible cables clamp opposite side regions of an X-ray film cassette. A locking mechanism serves to prevent retractive movement of the clamps and to urge them firmly into engagement with the film cassette to hold it in alignment with an X-ray beam axis. The cables have spaced parallel reaches defining an unobstructed



central region therebetween for phototiming control of the X-ray exposure. One of the interconnecting cables is reeved around a pulley connected to an electrical signal means for providing a signal representative of the size of a cassette being clamped.

3,829,699

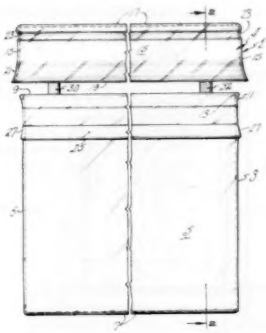
HOLDER FOR X-RAY CASSETTES

William E. Anspach, Jr., 3896 Burns Rd., North Palm Beach, Fla. 33403

Filed Nov. 15, 1972, Ser. No. 306,562

Int. Cl. H05g *1/00*

U.S. Cl. 250—475 **9 Claims**

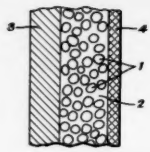


A holder, capable of being sterilized, for X-ray cassettes comprises a container having an open flared top. A cap for said container has an open bottom with an outwardly extending flare to facilitate entry of the flare on said container. Said cap has an indentation located therearound near its top so it can be snapped over the flared open end of said container. A seal member is located around said container to mate with the inner side of the flared portion of said cap. The cap is attached to the container by hinge straps. Said container and cap material is semi-rigid (non-collapsible) and also transparent and capable of permitting the passage of X-rays.

3,829,700
RARE EARTH PHOSPHORS FOR X-RAY CONVERSION SCREENS

Robert A. Buchanan, 4022 Ben Lomond, Palo Alto, Calif. 94306; Melvin Tecotzky, 27 N. Linden Ln., Mendham, N.J. 07945, and Kenneth A. Wickersheim, 3893 Middlefield Rd., Palo Alto, Calif. 94303

Continuation of Ser. No. 110,442, Jan. 28, 1971, Pat. No. 3,725,704. This application Nov. 24, 1972, Ser. No. 309,496
Int. Cl. H01j *1/62*
U.S. Cl. 250—483 9 Claims

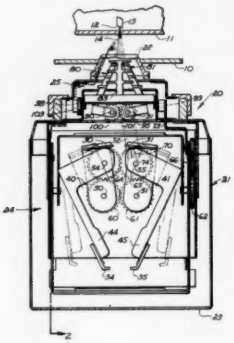


This invention relates to phosphor screens for converting x-rays to visible or near visible radiation and phosphor materials used in such screens. More particularly, the x-ray conversion screens are of the type used, for example, in fluoroscopy, film intensifiers and x-ray image intensifier tubes and the phosphor materials are oxysulfides of lanthanum, gadolinium or lutetium activated with trivalent terbium.

3,829,701
RADIATION COLLIMATOR

Michael Hura, Wickliffe, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Jan. 29, 1973, Ser. No. 327,644
Int. Cl. G03b *41/16*
U.S. Cl. 250—511 25 Claims

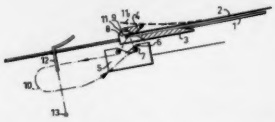


A radiation collimator including opposed pairs of movable off-focus radiation diaphragms comprising interleaved arrays of plates supported centrally on stems. The stems of each opposed pair of diaphragms are pivotally supported and coupled together for concurrent movement toward and away from each other. Each opposed pair of off-focus diaphragms is interconnected to corresponding on focus diaphragms movably mounted for rectangularly delineating the perimeter of the primary beam. The off-focus diaphragms extend to within very close proximity of the radiation source to block off-focus radiation.

3,829,702
METHOD AND ARRANGEMENT FOR CHECKING THE ALIGNMENT OF A PAPER SHEET IN PAPER SHEET FEED APPARATUS

Algot Ingemar Eriksson, Solna, Sweden, assignor to AB Printing Equipment, Sollentuna, Sweden

Filed Sept. 27, 1972, Ser. No. 292,720
Claims priority, application Sweden, Oct. 5, 1971, 12595/71
Int. Cl. H01j *5/16*
U.S. Cl. 250—571 6 Claims

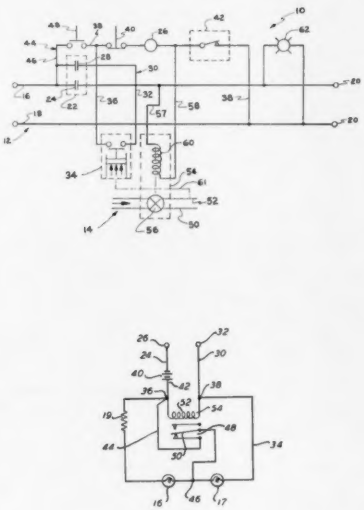


A method and an arrangement for controlling the alignment of paper sheets in a feed apparatus for printing presses or the like with a photocell arranged on the underside of a sheet retarding hook with a hole therethrough whereby the signal from the photocell is produced when the paper sheet occupies its correct position in the sheet retarding hook.

3,829,703
POWER SENSING AND SHUT-OFF APPARATUS

Wallace J. Wilkie, Ann Arbor, Mich., assignor to Sensorlok Corporation, Ann Arbor, Mich.

Filed Feb. 13, 1973, Ser. No. 332,074
Int. Cl. H02j *1/10*
U.S. Cl. 307—18 10 Claims



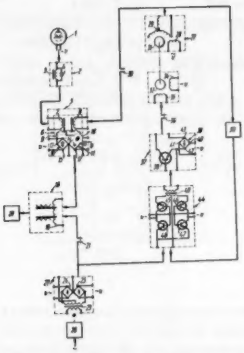
Apparatus in a combination system utilizing electric and fluid power systems for driving equipment or machinery wherein all power systems are interrupted upon the failure or loss of any one power source. The apparatus will prevent the automatic re-activation of the driven equipment upon the reestablishment of power following a failure or loss of power. Shut-off of the multiple power systems can also be accomplished through a single switch either manually or automatically.

3,829,704

ELECTRIC-HYDRAULIC GOVERNOK FOR A HYDRAULIC TURBINE

Veniamin Anatolievich Marbukh, ulitsa Tukhachevskogo 7, kv. 153; Veniamin Samuilovich Lychak, prospekt Metallistov 82, kv. 350, and Evgeny Andreevich Goncharov, Zanevsky prospekt 15, kv. 33, all of Leningrad, U.S.S.R.

Filed June 21, 1973, Ser. No. 372,418
Int. Cl. H02j 3/42
U.S. Cl. 307—87 1 Claim



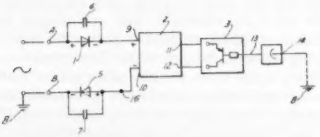
In an electric-hydraulic governor for a hydraulic turbine there are electrically connected to the input of an amplifier an element for measuring the angular speed of the turbine-generator unit, a mechanism for varying the output frequency of the generator and an element for measuring the frequency in the associated mains. The said mechanism, with the turbine-generator unit idling, continuously follows up the deviation of the output frequency of the generator from the frequency of the mains and in every moment of time produces a signal representative of this deviation. The mechanism is controlled by an electric motor including a control winding connected to another amplifier. The input of this other amplifier is electrically connected with the output of the element for measuring the mains frequency and with the output of the said mechanism for varying the frequency of the output current of the generator. Following synchronization, upon connection of the turbine-generator unit to the mains, the element for measuring the mains frequency is disconnected from said second amplifier and the mechanism for varying the frequency of the output current of the generator is connected thereto.

3,829,705

CIRCUIT ARRANGEMENT FOR ESTABLISHING A CONSTANT POTENTIAL OF THE CHASSIS OF AN ELECTRICAL DEVICE WITH RELATION TO GROUND

Heinz Richter, Kronach, Germany, assignor to Loewe Opta GmbH, Kronach, Germany

Filed May 24, 1973, Ser. No. 363,493
Claims priority, application Germany, May 25, 1972, 2225379
Int. Cl. H01h 35/00
U.S. Cl. 307—94 2 Claims



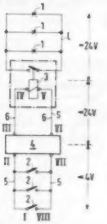
Circuit arrangement for establishing a reference potential of a chassis of an electrical device such as a radio and/or TV receiver, such device being provided with at least one contactless touching switch operating under the AC voltage principle. The device is switched by touching a unipole touching field in a contactless manner so as to establish connection to a grounded network pole. The circuit arrangement includes in combination an electronic blocking switch and a unidirectional rectifier which separates such switch from the network during the blocking phase.

3,829,706

SWITCHING ARRANGEMENT FOR REMOTE CONTROLLED ELECTRICAL LOADS

Gunter Seip, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Feb. 1, 1973, Ser. No. 328,673
Claims priority, application Germany, Feb. 5, 1972, 2205414; June 30, 1972, 2232170
Int. Cl. H01h 47/22
U.S. Cl. 307—147 19 Claims



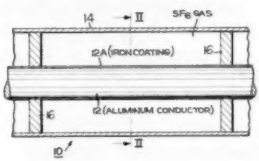
An improved load control system for lighting fixtures and the like which allows the wires leading to the control switch, or command transmitter, and the transmitter itself to be extremely thin and thus to be cemented to the outside of a wall avoiding time consuming and costly behind the wall installation. The command transmitter operates at a voltage of less than four volts which is coupled over strip lines to a converter module which increases the voltage to in the order of 24 volts to operate line voltage switching apparatus. The converter and switching apparatus are built into a single unit which may be installed directly in a distribution box.

3,829,707

GAS INSULATED HIGH VOLTAGE ELECTRICAL TRANSMISSION LINE WITH MEANS FOR DAMPING TRANSIENTS

Herbert M. Pflanz, Westwood, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 9, 1973, Ser. No. 331,215
Int. Cl. H01b 7/30
U.S. Cl. 307—147 16 Claims



A gas insulated electrical transmission line, such as a high voltage transmission line insulated by SF_6 (sulphur hexafluoride) gas, in which the conductor member is enclosed in a grounded metal sheath filled with an insulating gas, and in which the transmission line conductor member is coated for at least part of its length with a thin coating or skin of a material,

such as iron, which has a low skin depth in the frequency range of the undesirable electrical transients which it is desired to damp or attenuate. For example, the skin of iron may typically have a radial thickness of 0.01 mm. The inner conductor member to which the coating is applied should be of a material such as aluminum or copper which is a good electrical conductor and which has a large skin depth at the normal power frequency far below the frequency range of the electrical transients which the outer skin is to damp or attenuate.

3,829,708

TRANSISTOR SWITCHING CIRCUIT ARRANGEMENT FOR AN INDUCTIVE D-C CIRCUIT

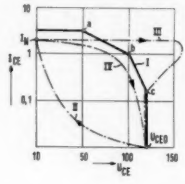
Hans Grunleitner, Nurnberg; Hans Kuhnlein, Grossgrundlach, and Manfred Liska, Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany

Filed July 12, 1972, Ser. No. 270,924

Claims priority, application Germany, July 17, 1971, 2135858

Int. Cl. H03k *17/00*

U.S. Cl. 307—202 **4 Claims**



A transistor circuit arrangement for switching an inductive d-c circuit on and off is disclosed in which "secondary" breakdown of the transistor switch is prevented. The breakdown is caused by excess voltage at the transistor during the disconnecting of the inductive circuit. To prevent this, an integrating element, whose charging and discharging circuits are decoupled, is arranged between the collector and the base of a transistor. This permits the controlled charging of the integrator when the inductor is disconnected and an approximately constant voltage rise at the collector-emitter of the transistor.

3,829,709

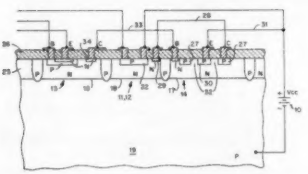
SUPPLY REVERSAL PROTECTON CIRCUIT

Robert Maigret, Warwick, and Geoffrey King, Coventry, R.I., assignors to Micro Components Corporation, Cranston, R.I.

Filed Aug. 31, 1973, Ser. No. 393,472

Int. Cl. H011 *19/00*

U.S. Cl. 307—202 **5 Claims**



A battery powered monolithic integrated circuit is described protected against accidental reversal of the battery in its holder. The protection is obtained by including a PNP lateral transistor in the circuit, connecting the emitter-base of the protection transistor in series with the collector of an NPN transistor, and connecting the protection transistor collector to the N pocket of a resistor included in the circuit.

3,829,710

LOGIC CIRCUIT ARRANGEMENT USING INSULATED GATE FIELD EFFECT TRANSISTORS

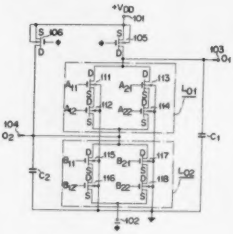
Masataka Hirasawa, and Kenji Kawagai, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed Aug. 20, 1973, Ser. No. 389,535

Claims priority, application Japan, Aug. 30, 1972, 47-86892; Aug. 30, 1972, 47-86893; Aug. 30, 1972, 47-86894

Int. Cl. H03k *19/08, 19/36*

U.S. Cl. 307—205 **14 Claims**



A logic circuit arrangement includes a first transistor having the source-drain conduction path connected between a first power source terminal and an output point and rendered conductive in response to a clock pulse applied to the gate electrode, and a plurality of second transistors, constituting at least one logic gate, each having the source-drain conduction path connected between the output point and a second power source terminal and the gate electrode supplied with a logic input. The arrangement is such that current is not concurrently flowed between the first power source terminal and the output point and between the output point and the second power source terminal. The source-drain conduction path of a third transistor is further connected between the first power source terminal and a junction of the adjacent two transistors in the logic gate and rendered conductive, during the conduction of the first transistor, in response to a clock signal applied to the gate electrode, so that a voltage of the output point indicates a predetermined level corresponding to a logic "1" or "0" irrespective of the difference of operation mode of each transistor.

3,829,711

SHIFT REGISTERS

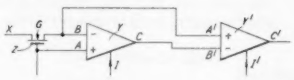
Brian Crowle, Dorchester, Dorset, England, assignor to Integrated Photomatrix Limited, Dorchester, Dorset, England

Filed Oct. 2, 1972, Ser. No. 294,182

Claims priority, application Great Britain, June 10, 1971, 46455/71

Int. Cl. G11c *11/40*

U.S. Cl. 307—221 c **8 Claims**



A shift register stage comprises first and second amplifying elements each constituted by first and second metal-oxide-semiconductor (MOS) transistors connected in series. In each amplifying element, the gate of the first transistor constitutes an inverting signal input, the gate of the second transistor constitutes a non-inverting signal input, a current carrying electrode of the second transistor constitutes a current input and the junction between the transistors constitutes an output. The inverting signal input of the first element serves as a data input and is connected to a gate means in the form of a further MOS transistor for controlling the application of a data signal to

said inverting signal input. The inverting signal input of the first element is connected to the non-inverting signal input of the second element and the output of the first element is connected to the inverting signal input of the second element whose output constitutes the output of the stage. In a shift register using a plurality of such stages, the output of each stage is connected to the gate means of the succeeding stage.

3,829,712

FREQUENCY DIVIDER CIRCUIT INCORPORATING PRESETTING MEANS

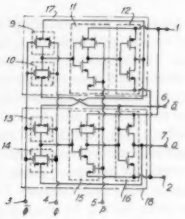
Tetsuro Hama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

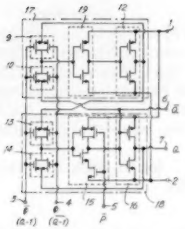
Filed Dec. 29, 1971, Ser. No. 215,959

Claims priority, application Japan, Dec. 30, 1970, 45-127219

Int. Cl. H03k *23/08*

U.S. Cl. 307—225 C **8 Claims**





A frequency divider circuit having master-slave type flip-flop binary circuits formed from complementary insulated gate field effect transistors. Presetting means incorporated in one of the master or slave flip-flop circuits, the clock signal for the flip-flop circuit not having said presetting means is adapted so that said flip-flop circuit is subordinate to the flip-flop circuit incorporating the presetting means during the presetting operation.

3,829,713

CMOS DIGITAL DIVISION NETWORK

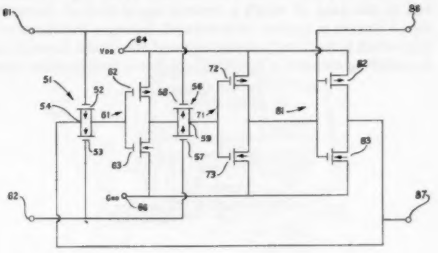
Michael L. Canning, Saratoga, Calif., assignor to Intersil Incorporated, Cupertino, Calif.

Filed Feb. 12, 1973, Ser. No. 331,586

Int. Cl. H03k *23/22*

U.S. Cl. 307—225 C **7 Claims**

A CMOS dynamic division circuit employing only transmission gates and inverters minimizes the number of units required for any particular division, which then minimizes



nodal capacitance for limiting power consumption. The circuit is particularly adapted for electronic watch circuits.

3,829,714

FREQUENCY DIVIDING LOGIC STRUCTURE

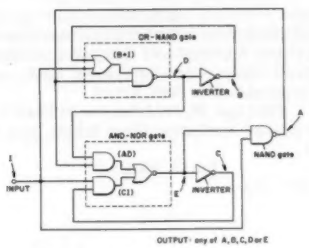
Eric Andre Vittoz, Cernier, Switzerland, assignor to Centre Electronique Horloger S.A.

Filed June 6, 1972, Ser. No. 260,179

Claims priority, application Switzerland, June 7, 1971, 8248/71

Int. Cl. H03k *21/06*

U.S. Cl. 307—225 C **3 Claims**



A frequency dividing logic structure comprises five logic operators, provided by AND-NOR elements formed by nineteen complementary MOST, connecting an input variable I to five output variables A, B, C, D and E in accordance with the following logical equations:

$A = EI$
$B = D$
$C = E$
$D = A(B + I)$
$E = AD + CI,$

or with the corresponding dual equations.

3,829,715

NOISE REDUCTION SYSTEM

Robert Nestor Joseph Van Sluys, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,362

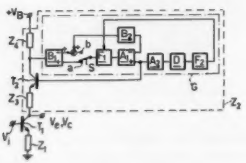
Claims priority, application Netherlands, Feb. 8, 1973, 7301752

Int. Cl. H03k *1/14*

U.S. Cl. 307—264 **4 Claims**

Signal transmission device for use in a noise reduction system. The device includes a circuit which comprises elements which are traversed by the same signal current, inter alia a first impedance, the main current path of a first transistor and a second impedance. The input signal is applied to the base, and the output signal is derived from the collector,

of this transistor. The second impedance is frequency-dependent and amplitude-dependent and comprises a transistor the main current path of which is traversed by the signal current and to the base of which a control signal derived from the signal current is applied via a network having a transfer function which is frequency-dependent and amplitude-dependent. A switching element is provided which in a first position ena-



bles a control signal derived from the signal current to be directly supplied to the second transistor via the network, whilst in a second position negative feedback of the network is brought about via a negative-feedback element and additional inversion of the control signal. By means of the switching element two complementary transfer functions can be accomplished by this device.

3,829,716
WIDE RANGE MONSTABLE MULTIVIBRATOR CIRCUIT HAVING A CONSTANT CURRENT SOURCE

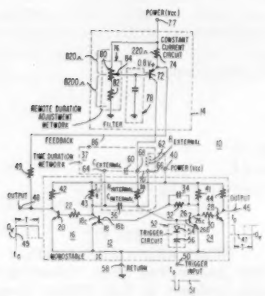
Ronald Bruce Goyer, North Hollywood, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,445

Claims priority, application Great Britain, June 27, 1972, 30037/72

Int. Cl. H03k *3/26*

U.S. Cl. 307—273 **8 Claims**



A monostable multivibrator integrated circuit producing an output pulses, whose time duration is normally determined by the combination of a timing resistor and a timing capacitor, is coupled to a constant current circuit which supplies constant current to the timing capacitor thereby considerably expanding the range of output time durations over that normally available. Additionally, the circuit provides for a remotely located time duration adjustment circuit which avoids the problems created by noise pick up on the line connecting the adjustment circuit to the monostable multivibrator circuit.

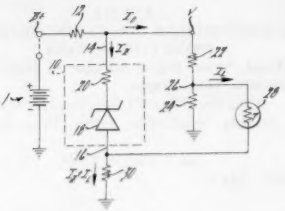
3,829,717
REFERENCE VOLTAGE COMPENSATION FOR ZENER DIODE REGULATION CIRCUIT

Clarence E. Harrison, Madison Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 29, 1973, Ser. No. 327,279

Int. Cl. H03k *1/14*

U.S. Cl. 307—297 **8 Claims**



A circuit is disclosed for providing a constant regulated voltage to a load in conjunction with a first stage zener diode regulation circuit. The circuit compensates for regulated voltage variations incident to zener diode internal resistance by applying the zener diode regulation voltage to a voltage divider which goes to ground and using the voltage differential between the intermediate junction of the voltage divider resistances and the anode of the zener diode and by further communicating the anode of the zener diode to ground through an additional, compensating, resistance. The value of this resistance may be determined by multiplying the internal resistance of the zener diode by the ratio of the resistance of the voltage divider from the intermediate junction to ground divided by the resistance from the intermediate junction to the cathode of the zener diode.

3,829,718
INTEGRATED CIRCUIT COMPRISING SUPPLY POLARITY INDEPENDENT CURRENT INJECTOR

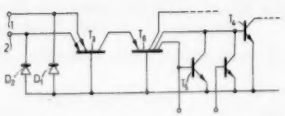
Cornelis Maria Hart, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 4, 1973, Ser. No. 320,964

Claims priority, application Netherlands, Jan. 8, 1972, 7200294

Int. Cl. H03k *3/26, 19/08*

U.S. Cl. 307—304 **10 Claims**



Integrated circuit suitable for any desired supply polarity by means of a rectifier bridge two rectifiers of which are designed as current injectors.

3,829,719
CONTACTLESS RELAY WITH A FIELD PLATE LOCATED IN THE MAGNETIC FIELD OF A CONTROL COIL

Horst Schweikart, Offenburg, Germany, assignor to GEHAP Gesellschaft fur Handel und Patentverwertung mbH & Co. KG, Sasbachwalden uber Achern, Germany

Filed July 24, 1972, Ser. No. 274,717

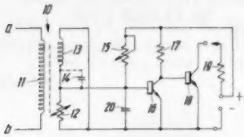
Claims priority, application Germany, July 23, 1971, 2136941; Mar. 25, 1972, 2214694

Int. Cl. H03k *17/00*

U.S. Cl. 307—309 **7 Claims**

A contactless relay having a least one magnetic field dependent resistor or field plate located in the range of the magnetic

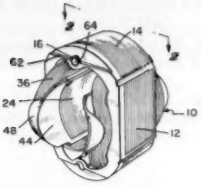
field of a control coil, and a control and stabilization winding disposed on the control coil and coupled to the magnetic resistor so that the contactless relay will operate reliably and repeatably over a wide temperature and frequency range.



3,829,720
MOTOR STATOR

Roy L. Swanke, Newington, and Robert M. Leonard, West Simsbury, both of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Continuation of Ser. No. 52,827, July 7, 1970, abandoned, which is a continuation-in-part of Ser. No. 858,906, Aug. 14, 1969. This application Jan. 26, 1973, Ser. No. 326,578
Int. Cl. H02k *1/04*
U.S. Cl. 310—43 **8 Claims**



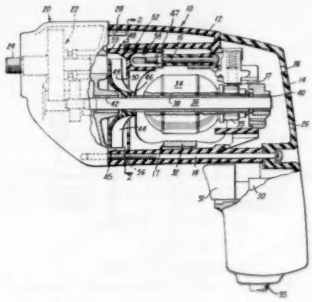
A laminated motor stator for an electric motor is provided with plastic molded-in-place end shrouds and selected electrically insulated surfaces along with interconnecting structural elements holding the laminations of the stator together as a unit and providing selected electrically insulated surfaces and a smooth rounded support for the field coil windings with a calculated yield to reduce tension on the inner winding turns by the outer winding turns. A method of forming the unified and insulated stator is also disclosed in which winding tension on the field turns is reduced and the coils are supported and held firmly in place.

3,829,721
AIR FLOW BAFFLE CONSTRUCTION FOR ELECTRIC MOTOR DEVICES

Francis Joseph Rosenthal, Jr., Fork, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed July 30, 1973, Ser. No. 383,704
Int. Cl. H02k *9/06*
U.S. Cl. 310—47 **4 Claims**

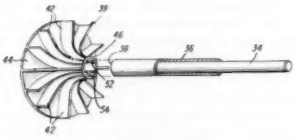
A fan baffle in the housing of electrically-operated devices, such as power tools, for directing cooling air through the housing, wherein the baffle includes intentional flashing about its periphery forming an improved air seal with the housing insuring against the build-up of a conductive path from the field coil of the motor by ambient graphite carried in the cooling air.



3,829,722
FAN MOUNTING ASSEMBLY

Francis Joseph Rosenthal, Jr., Fork, and Dale Christian Grieb, Baltimore, both of Md., assignors to Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 9, 1973, Ser. No. 387,134
Int. Cl. H02k *9/06*
U.S. Cl. 310—50 **6 Claims**



A portable electric tool including a housing having a motor disposed therein and provided with a rotatable armature shaft. A plastic fan for moving cooling air through the housing is secured and located on the armature shaft in a novel fashion which securely and accurately locates the fan on the shaft and minimizes stresses developed in the fan.

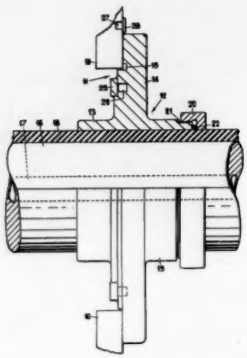
3,829,723
ALTERNATING CURRENT DYNAMO ELECTRIC MACHINES

Jeffery Gerald Heard, Stafford, England, assignor to The English Electric Company Limited, London, England

Filed Oct. 10, 1972, Ser. No. 296,101
Int. Cl. H02k *9/00, 9/20*
U.S. Cl. 310—54 **5 Claims**

A dynamo electric machine, especially a large alternating current hydrogen-cooled generator, in which each winding terminal comprises an electrically insulated conductor

secured and located in an aperture in the machine housing by means of a metal fitting, includes at least one duct in good



thermally conductive relationship with the fitting for the passage of a fluid coolant for cooling the fitting.

3,829,724

IMPROVEMENTS IN OR RELATING TO AN ELECTRIC GENERATOR WITH ADJUSTABLE ECCENTRIC MEMBER FOR VARYING THE OUTPUT VOLTAGES

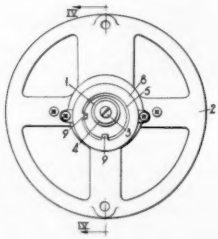
Michael Gilbert Sutton, and Michael Edward Gailes, both of Peterborough, England, assignors to British Domestic Appliances Limited, Peterborough, England

Filed Aug. 14, 1973, Ser. No. 388,200

Claims priority, application Great Britain, Aug. 16, 1972, 38147/72

Int. Cl. H02k *11/00*

U.S. Cl. 310—67 R **10 Claims**



A tachogenerator, for use for example, in motor speed control circuits, comprising a rotatable permanent magnet, a stationary coil spaced from the magnet, and an annular member of magnetic material disposed eccentrically with respect to the axis of rotation of the magnet and formed with at least one projection which extends into the space between the magnet and the coil for forming a path for magnetic flux coupling with the coil, the position of the projection being adjustable, for example by incremental angular movement of the annular member, so as to vary the output voltage from the coil for a given speed of rotation of the magnet.

3,829,725

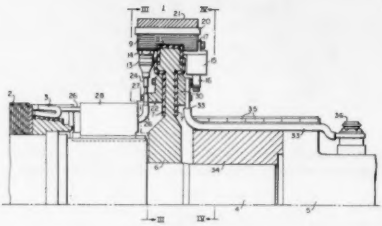
RECTIFIER ASSEMBLY FOR BRUSHLESS EXCITATION SYSTEMS

Sigrud R. Petersen, Irwin, and Josiah L. Young, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1973, Ser. No. 334,327

Int. Cl. H02k *11/00*

U.S. Cl. 310—68 D **6 Claims**



In a brushless excitation system, a rotating rectifier assembly is provided in which the rectifier diodes and associated fuses are mounted on heat sinks which are supported about the periphery of a rotatable support wheel.

3,829,726

ELECTRICALLY DRIVEN BALL OR ROLL SCREW MECHANISM

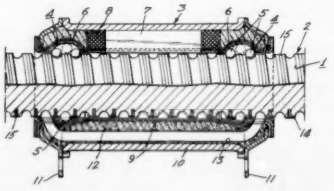
Sven Walter Nilsson, Partille, Sweden, assignor to SKF Industrial Trading and Development Company B.V., Jutphaas, Netherlands

Filed Jan. 17, 1973, Ser. No. 324,442

Claims priority, application Sweden, Jan. 25, 1972, 793/72

Int. Cl. H02k *7/06*; **F16h** *25/22*

U.S. Cl. 310—83 **10 Claims**



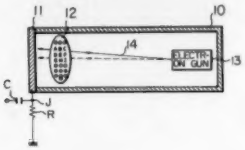
An electrically driven screw mechanism comprising an elongated rotor member in the form of a spindle having helically shaped grooves and including rotor windings on the spindle between the helically shaped grooves, a plurality of rolling elements engageable in the grooves, a stator member of generally cylindrical shape circumscribing the rotor member including stator windings and pole cores mounted therein, bearing units adjacent opposite axial ends of the stator member including a pocket spanning at least two grooves in the rotor member and defining recirculation means of an endless path for a plurality of rolling elements.

3,829,727

CHARACTER GENERATION CATHODE-RAY TUBE USING TANTALUM TARGET

Akimitsu Aoyana, Osaka, Japan, assignor to Matsushita Electric Industrial Company Limited, Kadoma City, Osaka, Japan

Filed June 19, 1972, Ser. No. 263,970
Claims priority, application Japan, June 18, 1971, 46-44332
Int. Cl. H01j 31/08, 31/58
U.S. Cl. 313—399 1 Claim



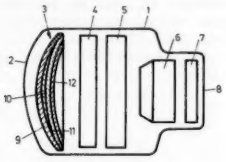
Herein disclosed is an improved character generation cathode-ray tube having a target made of tantalum and having a patterned tantalum oxide film formed on one surface thereof.

3,829,728

INLET SCREEN FOR AN ELECTRONIC OPTICAL IMAGE AMPLIFIER AND METHOD OF MAKING IT

Friedrich Gudden, Erlangen, and Wolfgang Schubert, Frauenaurach, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed July 6, 1972, Ser. No. 269,355
Claims priority, application Germany, July 8, 1971, 2134110
Int. Cl. H01j 31/50
U.S. Cl. 313—101 3 Claims



An inlet screen for an electronic optical image amplifier has a luminous layer placed upon a carrier which is followed by a photo cathode. The invention is particularly characterized in that the luminous layer is provided from the center to the edge with an absorbing substance in a manner counteracting the dropping brightness.

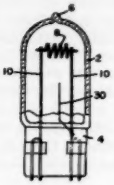
3,829,729

TUNGSTEN-HALOGEN LAMP

Arnold E. Westlund, Jr., Manchester; Lewis H. Palmer, III, Marblehead; Emery G. Audesse, Salem, all of Mass., and Leroy S. Huston, Derry, N.H., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed July 13, 1973, Ser. No. 378,975
Int. Cl. H01k 1/38, 1/44
U.S. Cl. 313—174 10 Claims

A tungsten-halogen lamp having an aluminosilicate glass envelope with a wedge base. Lead-in wires of molybdenum are secured through the base in a pinch seal and support an unstabilized tungsten coil filament by clamping. The lamp may include a getter in the form of a tantalum wire or strip which is also secured in the base pinch seal.

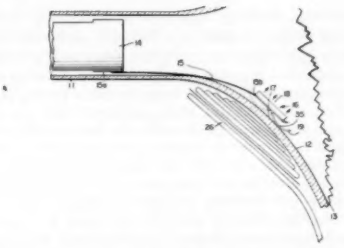


3,829,730

GETTER ASSEMBLY

Clair W. Reash, Fairview Park, and Vincent Pietrasz, Cleveland, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed June 12, 1973, Ser. No. 369,241
Int. Cl. H01j 19/20
U.S. Cl. 313—174 7 Claims



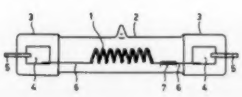
An improved getter assembly is provided for slideable insertion into a TV picture tube comprising a getter container, supported by an extended flexible spring-like support arm adapted to urge the getter assembly against the wall of the picture tube, the getter container having at least one side wall and a connecting floor member and a small cross section wire member depending downwardly from the floor member and having as a part thereof at least two laterally spaced apart curved base portions extending into said picture tube substantially parallel to the spring-like support member and for contacting the inner walls of the tube and supporting the getter container off the wall of the tube.

3,829,731

TUNGSTEN-BROMINE CYCLE LAMP

Germain Remi T'Jampens, and Gerrit Prakken, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,907
Claims priority, application Netherlands, May 17, 1972, 7206616
Int. Cl. H01k 1/54
U.S. Cl. 313—174 2 Claims



A tungsten-bromine cycle lamp which comprises a metal chosen from the group formed by titanium, zirconium, hafni-

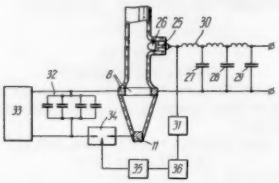
um, vanadium, niobium and tantalum as a material regulating the oxygen pressure.

3,829,732

GAS-DYNAMIC DISCHARGE LIGHT

Viktor Viktorovich Sysun, korpus 707 kv. 71; Jury Georgievich Basov, korpus 309 kv. 32, and Vladimir Ivanovich Roldugin, korpus 347 kv. 34, all of Moscow Zelenograd, U.S.S.R.

Filed Oct. 10, 1972, Ser. No. 296,155
Claims priority, application U.S.S.R., Oct. 11, 1971, 1704150
Int. Cl. H01j 61/54
U.S. Cl. 313—198 9 Claims



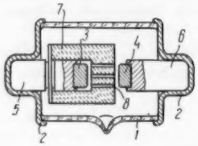
A gas-dynamic discharge light source comprising at least two discharge chambers made of a thermally stable dielectric material with light-reflecting properties, filled with a working medium, and linked together through the medium of an optically transparent tube, each discharge chamber having at one end a central electrode unit while positioned near the joint between each said discharge chamber and the optically transparent tube is an annular electrode unit coaxial with a respective central electrode unit; said optically transparent tube provided with a means for pre-ionization and transferring of at least part of the working medium therefrom into said discharge chambers through the electrode units; the working electrodes of said electrode units between which there flows working current initiating gas-discharge plasma and shock waves in said optically transparent tube are connected to control pulsed electric power storages.

3,829,733

SPARK GAP

Viktor Borisovich Belyaev, ulitsa, 4 kv. 19; Ekaterina Sergeevna Butrova, ulitsa Poletaeva 25, kv. 4; Yury Vladimirovich Kiselev, ulitsa Podgornaya 5, kv. 29, and Galina Tikohonovna Pozharskaya, ulitsa Tarolkovka Porharecaya 10, kv. 45, all of Ryazan, U.S.S.R.

Continuation of Ser. No. 221,661, Jan. 28, 1972, abandoned.
This application Jan. 29, 1973, Ser. No. 327,860
Int. Cl. H01j 17/02
U.S. Cl. 313—205 2 Claims



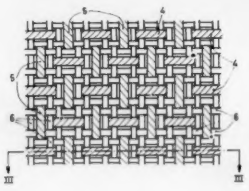
A spark-gap device is disclosed which comprises an envelope forming a gas-filled space. The space accomodates electrodes; namely, a cathode and an anode. The inter-electrode space accomodates a bushing of dielectric material attached to one of the electrodes. The bushing is provided with at least one duct made in the body of the bushing so that the spark discharge occurring between the electrodes passes through the duct having a constant longitudinal section.

3,829,734

GLOW DISCHARGE DISPLAY DEVICE

John Michael Stuart Schofield, Salfords near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1973, Ser. No. 352,582
Claims priority, application Great Britain, May 8, 1972, 21359/72
Int. Cl. H01j 1/02
U.S. Cl. 313—217 5 Claims



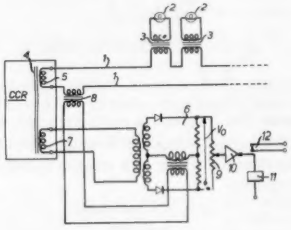
Electrical glow discharge display device comprising first and second sets of spaced elongate conductors. The conductors of the first set cross those of the second set to form a cross-bar addressing system for the resulting electrode pairs at the cross points of the conductors of the first set with those of the second. Said electrode pairs define an array of individually addressable glow-discharge paths through a gas atmosphere contained in the device. The conductors are supported in the desired configuration by means of fibres of electrically insulating material such as fibre glass with which they are interwoven. The fibres substantially completely surround each individual discharge path to separate it from the adjacent paths. The weave may be supported between a pair of plates, one of which is transparent, and which are sealed together around their edges to contain the discharge gas.

3,829,735

AIRFIELD LIGHTING CIRCUIT ARRANGEMENTS

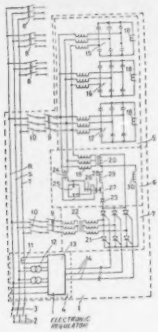
Monty David Berlock, London, and Tadeusz Dobrowolski, Ilford, both of England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Jan. 19, 1973, Ser. No. 324,943
Claims priority, application Great Britain, Jan. 28, 1972, 4012/72; Apr. 14, 1972, 17446/72
Int. Cl. H01j 7/42
U.S. Cl. 315—131 9 Claims



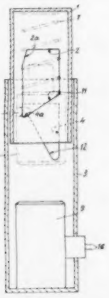
An airfield lighting circuit arrangement in which a plurality of lamp units are connected in the form of a loop circuit to which power supply means is connected, gating means being provided to which voltage waveforms corresponding to the loop current and the loop supply voltage are applied for affording an output signal which is indicative of the phase difference between said waveforms and therefore indicative of the number of lamp unit failures in the loop circuit.

3,829,736
REACTIVE ENERGY STATIC COMPENSATOR TO PROTECT THYRISTOR RECTIFIERS
Ananie Schirman, Brussels, Belgium, assignor to Ateliers d Constructions Electriques de Charleroi, Charleroi, Belgium
Filed Oct. 25, 1972, Ser. No. 300,705
Claims priority, application Belgium, Oct. 25, 1971, 3510
Int. Cl. H02h 7/00
U.S. Cl. 317—33 SC 10 Claims



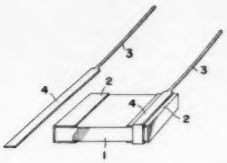
Inductive circuit apparatus having an iron core comprising at least one first winding connected to a network and a second winding connected to an equipment designed for a predetermined nominal voltage or current. The apparatus is characterized in that a diode, of the freewheeling type, is connected between the terminals of the second winding in such a manner as to short-circuit such winding for the induced current in the second winding, and in that an interrupting device, connected in series with the diode, is closed in the absence of voltage across the terminals of the first winding and is operated to open the circuit of the diode after the dampening of a transient current induced by the energization of the first winding.

3,829,737
PIEZO-ELECTRIC LIGHTERS
Lars Bertil Johnsson, Jonkoping, Sweden, assignor to Societe Anonyme GENOUD & CIE, Venissieux (Rhone), France
Filed July 18, 1973, Ser. No. 380,292
Claims priority, application France, July 28, 1972, 72.27950
Int. Cl. F23q 13/00, 3/01
U.S. Cl. 317—81 7 Claims



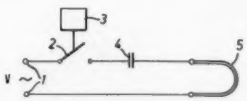
An upwardly open outer casing, containing a piezo-electric member, telescopically guides a downwardly open inner casing serving as an actuator for an ignition mechanism. The walls of the two casings are formed with partly registering slots terminating in oppositely sloping lower camming edges, the outer slot being provided at the upper end of its camming edge with a notch normally receiving a lug on a cylindrical striker axially slidable in the two prismatic casings. Upon depression of the inner casing against the force of a spring bearing upon the striker, a beveled upper edge of the inner groove cams the lug out of the notch whereupon the spring drives the striker into collision with the piezo-electric member. Upon the subsequent release of the actuator constituted by the inner casing, the two lower camming edges coact to return the lug to its notch as the striker is restored by the spring to its normal position.

3,829,738
MICA CAPACITOR
Masuichi Makihara, Tokyo, Japan, assignor to Shinnittoku Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 5, 1973, Ser. No. 394,588
Claims priority, application Japan, 48-44620
Int. Cl. H01g 1/14
U.S. Cl. 317—261 1 Claim



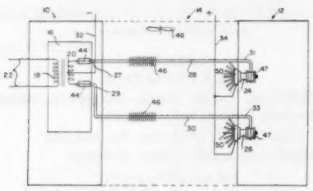
A mica capacitor having lead conductors having a strip-like end portion wound on the mica capacitor at each end thereof through a lead-out foil. With this construction, the thickness of the capacitor can be reduced without reducing the strength of attachment of the leads. Also, it is possible to reduce the manufacturing steps and eliminate failure of soldering.

3,829,739
IGNITION DEVICE FOR BURNER INSTALLATIONS
Niels Lervad Andersen, and Ejvind Hubschmann, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 13, 1973, Ser. No. 387,673
Claims priority, application Germany, Sept. 1, 1972, 2243120
Int. Cl. F23q 7/10
U.S. Cl. 317—98 1 Claim



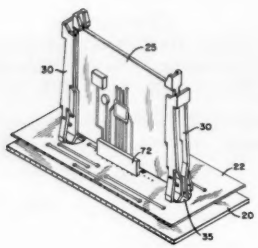
The invention relates to an oil burner ignition system of the type having an electrically heatable silicon carbide incandescent resistor. Aging of the resistor causes the resistance to increase with a resulting drop in the power input. A capacitor is used in series with the resistor to compensate for the increase in resistance of the resistor as it ages. It is also found that the capacitor causes the resistor to become incandescent more rapidly.

3,829,740
COOLING ARRANGEMENT FOR A DIRECT CURRENT POWER SUPPLY
Jack O. Beasley, Indianapolis, Ind., assignor to The Buehler Corporation, Indianapolis, Ind.
Filed July 9, 1973, Ser. No. 377,529
Int. Cl. H05k 7/20
U.S. Cl. 317—100 26 Claims



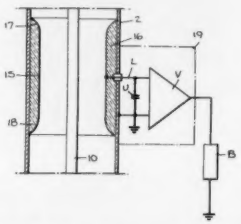
Apparatus and method for dissipating the heat generated by the components of a power supply. The components can be isolated from one another in a plurality of sealed compartments. Each isolated component can be thermally connected to a heat pipe which is operative to transfer heat generated by the respective component out of its sealed compartment to a heat sink which is in communication with ambient air currents.

3,829,741
MOUNTING FOR PRINTED CIRCUIT BOARDS
Stuart E. Athey, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Filed Jan. 15, 1973, Ser. No. 323,538
Int. Cl. H02b 1/02
U.S. Cl. 317—101 DH 3 Claims



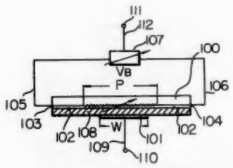
A mother printed circuit board is supported in spaced parallel relation to a metal base plate by a plurality of unitary plastic support stands. The stands have lower ends which are keyed onto the base plate, with integral locking fingers which extend outwardly above corresponding apertures formed in the mother board providing ease of assembly of the mother board onto the support base without the necessity for using fasteners or mounting screws. The same support stands are provided with vertically extending guides and locking arms for retaining a daughter board in perpendicular relation to the mother board again without the use of fasteners or mounting screws. In practice, a plurality of pairs of support stands may be used with a single mother board to permit insertion of a corresponding plurality of daughter boards.

3,829,742
VOLTAGE TRANSFORMER FOR A FULLY INSULATED METAL-CLAD, HIGH-VOLTAGE SWITCHING INSTALLATION
Willi Muller, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Sept. 17, 1973, Ser. No. 397,922
Claims priority, application Germany, Sept. 15, 1972, 2245779
Int. Cl. H02b 1/18
U.S. Cl. 317—103 6 Claims



A voltage transformer is disclosed for a fully insulated metal-clad, high-voltage switching installation equipped with a metal outer tube surrounding a high-voltage conductor. The voltage transformer includes a pressure vessel mounted gas-tight to the outer tube of the switching installation. A metal rod-like extension is connected to the high-voltage conductor and is arranged in the pressure vessel. A laminar electrode is also arranged within the pressure vessel in surrounding relation to the rod-like extension to conjointly define therewith a high-voltage capacitor. A low-voltage capacitor is connected to the high-voltage capacitor so as to constitute therewith a capacitive voltage divider. An amplifier is connected to low-voltage capacitor and has an output connectable to a load.

3,829,743
VARIABLE CAPACITANCE DEVICE
Tadao Kohashi, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Kadoma City, Osaka, Japan
Division of Ser. No. 72,695, Sept. 16, 1970, abandoned. This application July 10, 1972, Ser. No. 270,171
Claims priority, application Japan, Sept. 18, 1969, 44-75637; Sept. 19, 1969, 44-76061; Sept. 22, 1969, 44-77179
Int. Cl. H01l 11/14
U.S. Cl. 317—235 B 8 Claims



This specification discloses variable capacitance devices which vary their capacitances under the influence of DC bias voltages or radiations. One embodiment comprises a PN junction diode, a dielectric thin film deposited on the surface of said junction diode at which the junction terminates and a conducting electrode deposited on the dielectric thin film, in which the area of an equivalent plate electrode formed in said junction diode is varied by changing the thickness of a depletion region. In another embodiment, a nonlinear resistance layer deposited on the dielectric thin film is employed. As a DC voltage as applied to the nonlinear resistance layer is increased, the lateral conductivity of the nonlinear resistance layer increases and the area of the equivalent plate electrode

facing the conducting electrode is increased. A further embodiment employs a thin film transistor or a MIS transistor to vary the area of the equivalent plate electrode provided therein.

3,829,744

GAS FILLED MEASURING CONDENSER

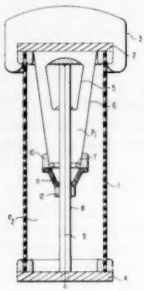
Friedrich Raupach, Wildensorger Strasse 9, Bamberg, Germany

Filed Mar. 23, 1973, Ser. No. 344,146

Claims priority, application Germany, Mar. 24, 1972, 2214288

Int. Cl. H01g *5/02*

U.S. Cl. 317—244 **34 Claims**



A condenser, especially for measurement purposes, in which the high voltage electrode and the low voltage electrode are arranged on the inside of an insulating casing housing filled with a gas; the space between the high voltage electrode and the low voltage electrode or a space enclosed by an auxiliary electrode surrounding the high voltage and low voltage electrodes is closed off insulatingly gas-tight and the pressure of the gas in this space is higher than the pressure of the gas in the space formed between such electrodes and the insulating casing housing.

3,829,745

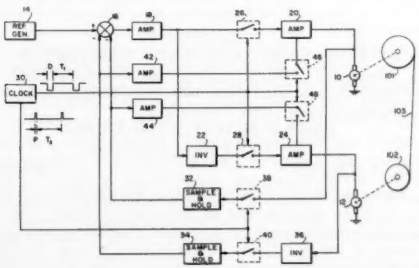
TECHNIQUES FOR MAINTAINING SUBSTANTIALLY CONSTANT TENSION IN WEB

In W. Ha, San Jose, and John C. Fravel, Los Gatos, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 2, 1973, Ser. No. 329,054

Int. Cl. B65h *77/00*

U.S. Cl. 318—7 **12 Claims**



A method of and apparatus for maintaining substantially constant tension in a web that is bi-directionally transported between first and second reels are disclosed in accordance with the teachings of the present invention. First and second motors are mechanically coupled to the first and second reels to effect direct reel-to-reel drive whereby the web is transported therebetween. First and second currents proportional to the respective angular velocities of the first and second reels are derived and at least one of the first and second currents is applied to at least one of the motors as a reverse biasing current therefor to provide a reverse torque to the motor whereby the rotation of the motor is opposed.

3,829,746

LINEAR MOTOR WITH ELECTRO-MAGNETIC CONTROL

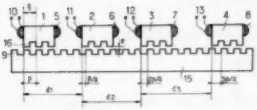
Trong Nguyen Van, 1 Allee du Dauphine 78170, La Celle St. Cloud, and Louis Joseph Fechant, 19 Rue Albert ler 78, Le Vesinet, both of France

Filed Sept. 21, 1972, Ser. No. 290,860

Claims priority, application France, Sept. 28, 1971, 71.34794

Int. Cl. H02k *41/02*

U.S. Cl. 318—135 **3 Claims**



Linear motor with electromagnetic control, characterized by the fact that it has a first rectilinear magnetic element having throughout the whole of its length uniformly distributed teeth opposite which there is a limited number of teeth belonging to other magnetic elements subjected to the action of a field created by a winding.

For use as a linear drive for textile machines, handling equipment and others.

3,829,747

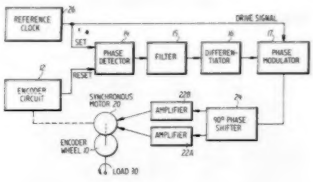
CONTROL SYSTEM FOR SYNCHRONOUS MOTOR

Martin G. Woolfson, Baltimore, and Gilbert H. Frank, Columbia, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 22, 1973, Ser. No. 343,708

Int. Cl. H02p *7/36*

U.S. Cl. 318—175 **10 Claims**



A synchronous motor control system achieves an increase in motor damping by electronic means. Additional circuitry is employed in the motor drive electronics to respond to disturbances in load torque occurring on the motor shaft and to introduce a selected amount of phase modulation to the motor drive signal for compensation. An encoder wheel attached to the motor shaft and encoder electronics derive a signal corresponding in frequency to the rotation of the motor shaft. A phase detector circuit continuously measures the phase difference between the motor drive signal frequency and the motor shaft encoded frequency. Through a process of filtering and differentiation, the time rate of change in phase difference is measured, and the resulting electrical voltage

equivalent of phase change is made input for phase modulation to the motor drive circuitry. By proper selection of circuit constants, a state of critical damping of motor oscillations for torque disturbances on the motor shaft is achieved.

3,829,748

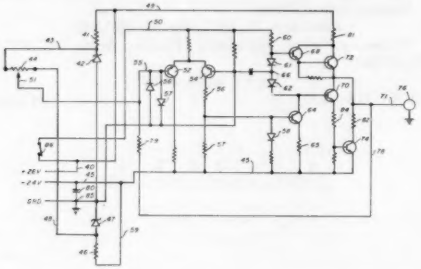
TAPE DRIVE D.C. MOTOR CONTROL SYSTEM

Raymond A. Davenport, Okemah, Okla., assignor to Oktronics, Inc., Okemah, Okla.

Filed Aug. 30, 1972, Ser. No. 284,768

Int. Cl. H02p *3/22*

U.S. Cl. 318—257 **1 Claim**



This invention describes an improved electronic circuit for driving a DC motor which is used for reeling and unreeling tape in a perforated paper tape reader-handler. The tape is unreeled from the reel to a roller on a dancer arm. The rotation of the dancer arm rotates a potentiometer. In accordance with the angle and direction of rotation from a nominal midposition, an increasing positive or negative voltage is applied to an amplifier which drives the DC motor through a power amplifier in one direction or the other.

3,829,749

DIRECT-CURRENT MOTOR WITH PERMANENT-MAGNET ROTOR AND SEQUENTIALLY ENERGIZED STATOR WINDINGS

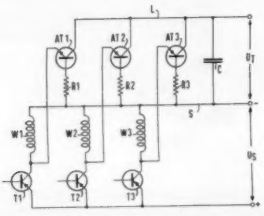
Hubert Richt, Soecking, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 15, 1973, Ser. No. 341,672

Claims priority, application Germany, Mar. 15, 1972, 2212497

Int. Cl. H02p *5/16*

U.S. Cl. 318—331 **2 Claims**



An electric motor circuit is disclosed and includes a direct-current motor having star-connected stator windings and a permanent magnet rotor. A sequential switching circuit connect each of the stator windings in sequential relation with a direct current supply during intermittent active intervals of time. A voltage-responsive circuit is connected to the stator windings for responding to voltages induced in each of the windings between the active intervals by the rotor. The voltage responsive circuit includes transistors each of which is connected at its emitter to the end of a corresponding one of the stator windings remote from the star point. The respective bases of the transistors are connected to the star point of the stator windings and the respective collectors to a common line so that through the collectors, the half-waves of the induced voltages of a polarity opposite to that of the supply voltage are decoupled from the stator windings.

3,829,750

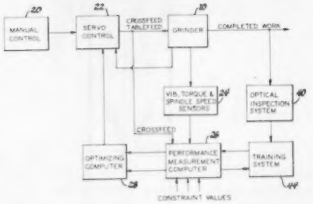
SELF-ADAPTIVE PROCESS CONTROL

Ronald M. Centner, Southfield, Mich., and Robert J. Velek, Brookfield, Wis., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 12, 1971, Ser. No. 114,773

Int. Cl. G05b *13/00*

U.S. Cl. 318—561 **3 Claims**



A control system for a surface grinder includes sensors associated with the machine-workpiece interface operative to generate signals proportional to parameters associated with the machine process such as vibration, temperature and torque. These signals are processed to calculate a figure-of-merit for the operation in terms of metal removal rate and to develop signals which are compared with predetermined constraints on the range of operation. The grinder crossfeed and tablefeed are then modified in accordance with a hill-climbing strategy in order to optimize the figure-of-merit without violating any of the constraints. The actual surface finish of a completed section of the part is sensed by an optical instrument and is compared with a calculated surface finish value derived from the previously measured process parameters and used in connection with the constraint violation and detection. The configuration of the computer which generates the calculated surface finish value from the measured process parameters is adaptably modified in accordance with a hill-climbing strategy in order to train the computer to calculate accurate estimates of the surface finish under varying performance conditions.

3,829,751

APPARATUS FOR CONTROLLING VARIATION IN A CHARACTERISTIC OF STRAND-LIKE MATERIAL

Salvatore Bottone, Jr., Schenectady, N.Y., assignor to General Electric Company, New York, N.Y.

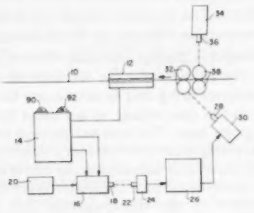
Filed Apr. 20, 1973, Ser. No. 352,864

Int. Cl. G05d *16/00*

U.S. Cl. 318—645 **10 Claims**

Apparatus for controlling variation in a characteristic such as denier or sliver weight of strand-like material. The apparatus includes means for fluidically monitoring the characteristic of the material as it passes therethrough. A fluidic bridge is responsive to the monitoring means and produces first and second pressure signals from respective first and second outputs when the monitored characteristic of the material has deviated from a nominal value beyond a respective high and low set predetermined limit. First and second pressure sensitive electrical switches are respectively fluidically coupled to the first and second outputs of the fluidic

bridge and are actuated only in response to and for the duration of one of the first and second pressure signals. Means responsive to the actuation of the first and second switches are provided to cause drive means which communicate with the



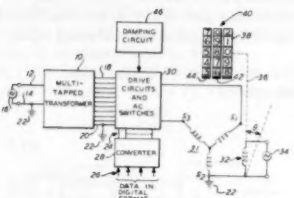
strand-like material to vary the characteristic of the strand-like material until the deviation of the characteristic of the material is confined between the high and low set predetermined limits.

3,829,752

ELECTRONIC SYNCHRO DRIVE SYSTEM

Francis M. Martines, Lake Ronkonkoma, N.Y., and Philip K. Spahr, Nutley, N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Mar. 16, 1973, Ser. No. 342,066
Int. Cl. G05b *6/02*
U.S. Cl. 318—654 **4 Claims**



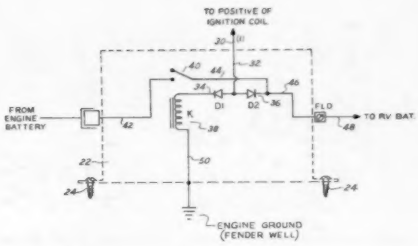
Described herein is an efficient, electronically damped drive system for a torque receiver synchro, which is to be randomly positioned at any one of several discrete positions. A coded input command is routed to a particular drive circuit, which corresponds to the location that the synchro is to be positioned. The drive system, through a pair of bi-directional, AC switches, connects a pair of windings of a multi-tapped transformer to each of the appropriate windings on the synchro. The windings of the multi-tapped transformer which are selected have voltages and phase relationship which are pre-determined and which correspond to the synchro winding excitation voltage required to position the synchro at the location identified with the coded input command. The drive circuitry includes a feature which upon reaching the desired position allows for the continuous application of the particular voltages to the appropriate synchro windings until positive reset action is initiated prior to an update in synchro position. Additionally, a unique electronic damping circuit is provided which "kicks" the synchro in discrete steps by providing a source of controlled drive pulses for the drive circuitry. The pulses are controlled as to number, frequency, and duty cycle so as to provide a smooth transition from one position to the next. After the "kick" pulses have smoothly repositioned the synchro, full energy is then automatically applied to the appropriate synchro windings so as to firmly lock the position of the synchro.

3,829,753

DUAL BATTERY CHARGER FOR VEHICLES

John J. Marshall, Grand Rapids, Mich., assignor to Aichele Associates, Inc., Fort Wayne, Ind.

Filed Oct. 17, 1973, Ser. No. 407,237
Int. Cl. H02j *7/00*
U.S. Cl. 320—6 **2 Claims**



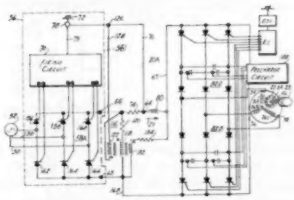
A dual battery charger system for vehicles, such as a system for charging an automobile main battery and an auxiliary battery for a camper, a mobile home, a motor home or boat, in which the system has an ignition coil and a unit having a lead connected to the main battery, a lead connected to the auxiliary battery, a switch interconnecting the leads, and a relay coil for closing the switch. The system is energized by a signal from the ignition coil of the automobile, and includes a subcircuit which protects the system in the event of a short or misconnection. The system can use a weak sensing signal to control the relay and will respond instantaneously to any condition which would be a drain from the main battery to the auxiliary battery.

3,829,754

COMPENSATED ADJUSTABLE FREQUENCY POWER SUPPLY OF THE INVERTER TYPE

Charles E. Rettig, Brookfield, Wis., assignor to The Louis Allis Company, Milwaukee, Wis.

Division of Ser. No. 83,922, Oct. 26, 1970. This application Jan. 8, 1973, Ser. No. 321,926
Int. Cl. H02m *5/44*
U.S. Cl. 321—2 **13 Claims**

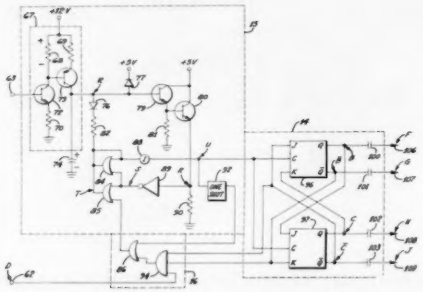


A power supply of the inverter type for controlling the operative condition of an alternating current load includes a power source providing an output having a predetermined ripple component. An inverter is connected in series with the power source for providing variable frequency energization to the load. This variable frequency energization generates a variable frequency ripple component, the effects of which on the power source are minimized by a sensing means which accentuates the power source's own ripple. A rate transformer may be used for this purpose.

3,829,755
SEQUENCER FOR A MULTIPLE SWITCHING REGULATOR

John R. Nowell, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 5, 1973, Ser. No. 348,571
Int. Cl. H02m 3/22
U.S. Cl. 321—2 8 Claims

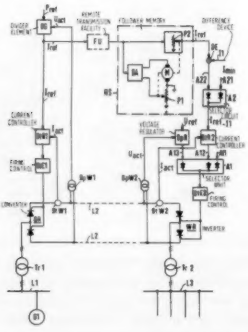


The sequencer employs a variable current source, a Schmidt trigger circuit, a one-shot, a pair of master-slave flip-flops and logic gates to provide pulses for operating a multiple switching regulator. A logic gate disables the sequencer to prevent the generation of pulses while a portion of the switching regulator is delivering current to an output terminal and thereby prevents possible damage to the switching regulator.

3,829,756
POWER CONTROL APPARATUS FOR DIRECT-CURRENT LINES

Werner Hockstetter, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 26, 1973, Ser. No. 326,772
Claims priority, application Germany, Jan. 29, 1972, 2204229
Int. Cl. H02m 1/18
U.S. Cl. 321—4 2 Claims

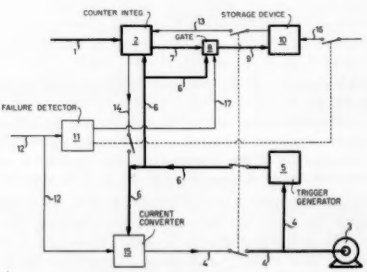


A power control apparatus for controlling the power transmitted over a direct-current line connected between alternating-current lines is disclosed. The direct-current line is connected to the alternating-current lines by a converter and inverter respectively. The power control apparatus includes a converter firing unit connected to the converter, a converter current controller connected to the converter firing unit, and a power regulator connected to the converter current controller for supplying the same with a current reference value. An inverter firing unit is connected to the inverter and a voltage controller and an inverter current controller are provided for setting respective voltages on the direct-current line. One of these voltages is smaller than the other at a given time. A connection circuit connects the last-two mentioned controllers to the inverter firing unit so as to cause the controller corresponding to the one voltage to act upon the inverter firing unit at the given time. The inverter current controller has an input for receiving a current reference value smaller than the current reference value supplied to the converter current controller. The inverter current controller is configured to stabilize the current in the direct-current line to the current reference value supplied to the inverter current controller in a predetermined time interval. A remote transmission arrangement is connected between the power regulator and the inverter current controller for adjusting the current reference value supplied to the inverter current controller in response to a change in the power after the time interval has elapsed.

3,829,757
SYSTEM FOR CONTROLLING THE FREQUENCY OF AN ALTERNATING CURRENT CONVERTER IN RESPONSE TO LOAD CHANGES

Hermann Frank, Sulzbach/Taunus, and Rudolf Huber, Bobingen, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/am Main-Hoechst, Germany

Continuation-in-part of Ser. No. 162,979, July 15, 1971. This application Jan. 31, 1973, Ser. No. 326,557
Claims priority, application Germany, July 18, 1970, 2035811
Int. Cl. H02m 7/00
U.S. Cl. 321—18 8 Claims



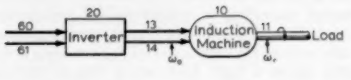
Alternating current having a selected frequency is produced by a converter to operate a synchronous motor at a desired speed. The frequency of the alternating current is determined by an accumulating circuit that supplies synchronizing impulses to the converter at a rate determined by the setting of the accumulating circuit and in response to a pilot signal. During failure of power to run the converter, a trigger generator responsive to voltage from the decelerating motor changes the control setting of the circuit so that, upon restoration of power, synchronizing pulses will be produced at a lower repetition rate, causing the frequency of alternating current from the converter to be commensurate with the reduced speed of the motor.

3,829,758

AC-DC GENERATING SYSTEM

George H. Studtmann, Mount Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 2, 1972, Ser. No. 222,939
Int. Cl. H02p 9/00
U.S. Cl. 322—28 11 Claims



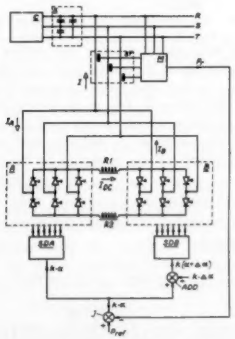
An induction machine driven as a generator has its output connections coupled to the output connections of a static inverter circuit, connected to operate not as an inverter but as a switching system. A capacitor is coupled to the bus conductors of the switching system. D-c excitation is furnished to the induction generator system only for starting, and is then disconnected. At rated speed the static inverter circuit operates as a switching system to regulate connection of the capacitor to the induction generator on a time-sharing basis, replacing the directly connected capacitor bank in known systems. In multi-phase systems the capacitor is not required, as the switching system periodically directs the flow of reactive energy from one phase to another of the inductive machine. By regulating the frequency of the switching operation the overall system can be made to generate effectively over a wide range of input speeds. An a-c output voltage is available from the common terminals between the induction generator and the switching system, and a d-c output voltage is also available from separate conductors of the switching system.

3,829,759

MEANS FOR GENERATING REACTIVE POWER

Kjeld Thorborg, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vastera, Sweden

Filed Jan. 18, 1973, Ser. No. 218,844The portion of the term of this patent subsequent to June 19, 1990, has been disclaimed.
Int. Cl. G05f
U.S. Cl. 323—119 9 Claims



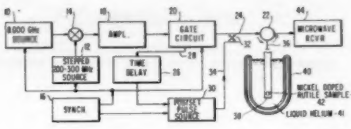
An arrangement for generating reactive power includes first and second line-commutated converters, the AC terminals of which are connected to an alternating voltage network to which a capacitor bank is also connected. Two branchless connections connect the converters in anti-parallel relation on the DC side and constitute an unloaded DC intermediate line, each DC terminal of each converter being connected by a branchless reactor connection to a DC terminal of the other converter.

3,829,760

SPIN ECHO FREQUENCY HOPPING

Donald A. Bozanic; Dickron Mergerian, both of Baltimore; Ronald W. Minarik, Lutherville, and Peter H. Pincoffs, West Severna Park, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1971, Ser. No. 173,491
Int. Cl. G01n 27/78
U.S. Cl. 324—.5 R 9 Claims



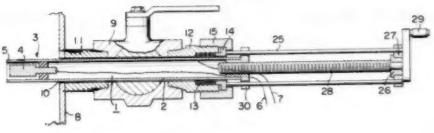
A means for decreasing the time between successive spin echo sequences for a zero field spin echo system utilizing a nickel doped rutile sample by incrementally stepping or frequency hopping the RF carrier of the stored pulse over a predetermined operating frequency band and coupling each sequence to the sample before a thermal equilibrium of the spin system is reached for the immediately preceding sequence. Thus a single spin echo sample having a relatively wide bandwidth is multiplexed or time shared for a plurality of RF carrier frequencies.

3,829,761

CELL DEVICE FOR MEASURING ELECTRIC CONDUCTIVITY OF LIQUIDS

Tetuo Shimizu, and Akikazu Nishikawa, both of Tokyo, Japan, assignors to Denki Kagaku Keiki Co. Ltd., Tokyo, Japan

Filed Dec. 13, 1973, Ser. No. 314,525
Int. Cl. G01n 27/42
U.S. Cl. 324—30 B 3 Claims



Mounting means for demountably mounting a cell device for measuring electric conductivity of liquid to a liquid tank so as to insert a detecting cell fixed on one end of a supporter tube of the device into a liquid in the tank through a gate valve attached to an opening in the tank wall is disclosed in accordance with the teaching of this invention. Said means comprises parallel guide rails to be fixed demountably to the outer of the gate valve to extend outwardly, a screw rod supported on the outer end of the rails, and a nut fixed on the end of said supporter tube and drived along said rails by said screw rod.

A detecting cell of the cell device according to this invention, in which a cylindrical electrode and a central electrode are disposed concentrically and electrically insulated by a glass insulator sealed to said electrode by glass-to-metal sealing is also disclosed.

3,829,762
METHOD AND DEVICE FOR MAGNETOGRAPHIC INSPECTION

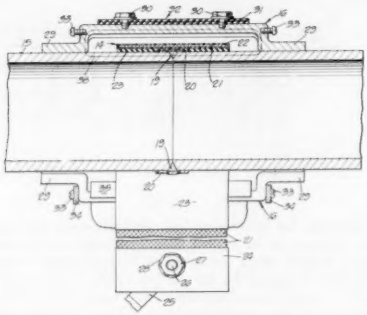
Friedrich M. O. Forster, Grathwohlstrasse 4, D-7410 Reutlingen, Germany

Filed Aug. 6, 1973, Ser. No. 385,999

Claims priority, application Germany, Aug. 8, 1972, 2239014

Int. Cl. G01r *33/12*

U.S. Cl. 324—37 **10 Claims**



Clamps are received onto a pipe and include ferromagnetic portions which bridge the circumferential pipe regions being tested. A band shaped magnetizing coil is not moved during test so that radial forces do not have to be taken into consideration. Thus, extremely high magnetizing field intensities are permissible without adverse practical effect. The return of the magnetic flow over the clamps results in a magnetic circuit which is, for all practical purposes, closed. The ferromagnetic clamps collect the magnetic lines of force which would otherwise have closed over the air, and in this manner amplify the magnetic flux passing through the pipe. A storage tape is applied directly to the pipe, over which the magnetizing coil and clamps are arranged.

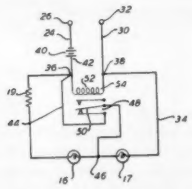
3,829,763
AUTOMOTIVE VOLTAGE AND CONTINUITY TESTER

Philip J. Morin, 118 Market St., Fort Kent, Maine 04743

Filed May 4, 1973, Ser. No. 357,087

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **6 Claims**



An automotive voltage and continuity testing apparatus. The test circuit of the apparatus includes an indicator branch having in series a pair of indicating lamps. One side of a battery is connected to a first terminal point of the indicating branch, and a first test lead is connected to the other side of the battery. A second test lead is connected to the second terminal point of the indicating branch, so that when the pair of test leads are connected to a common conductor for testing continuity, the battery potential is applied at the terminal points of the indicator branch. A switched shorting branch is connected between the first terminal point and a point between the indicator lamps. The switch in said shorting branch is activated by an actuating branch connecting the terminal points. The switch is normally closed to short one of the indicating lamps and the battery potential is of such magnitude that the current through the switch actuating branch during continuity testing is insufficient to actuate the switch, whereby only one indicator lamp is lit if continuity is present. When a potential is electrically applied across the test leads, which potential in series with the battery provides a total potential exceeding a predetermined value, the current through the switch actuating branch opens the switch to electrically remove the shorting branch, permitting both of the indicator lamps to light. Such action thus permits automotive hot wires to be detected by contacting the hot wire with the second lead while the first lead is connected to a ground point on the auto chassis. A casing contains the test circuit and battery, with the test leads extending from the casing to enable the test functions. The indicating lamps, which may be LED's project through openings of the casing, as to be visible to an operator of the apparatus.

3,829,764
METHOD AND APPARATUS FOR MEASURING PHYSICAL AND/OR CHEMICAL PROPERTIES OF MATERIALS

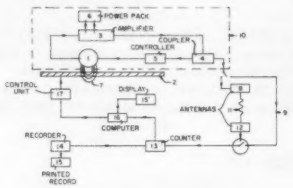
Renato Guiseppe Bosisio, 745 Louis Hebert, Longueuil, Quebec, Canada

Filed Apr. 3, 1973, Ser. No. 347,418

Claims priority, application Great Britain, Apr. 5, 1972, 15597/72

Int. Cl. G01r *27/04*

U.S. Cl. 324—58 R **28 Claims**



A method and apparatus for measuring physical and/or chemical properties of materials such as dielectric constants, solid content, or the like without establishing any physical contact with the materal. The method and the apparatus rely upon the generation of electromagnetic waves, presumably radio frequency waves in a fringing field which is directed toward the surface of the material to be tested. The electromagnetic waves are coupled through this material and a sensor in an oscillator circuit and this oscillator circuit generates an oscillating frequency proportional to the property of the material.

3,829,765
ELECTRONIC APPARATUS FOR DETECTION AND IDENTIFICATION OF ENERGIZED AND/OR NONENERGIZED ELECTRICAL CONDUCTORS

Lawrence L. Siler, 2175 S.W. 79th Ave., Portland, Oreg. 97225

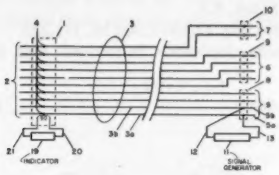
Continuation of Ser. No. 121,273, March 5, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,283

Int. Cl. G01r *19/16*; **G01r** *31/02*

U.S. Cl. 324—67 **3 Claims**

An electrical circuit locator means comprises signal generator means connectable to electrical lead means at one location

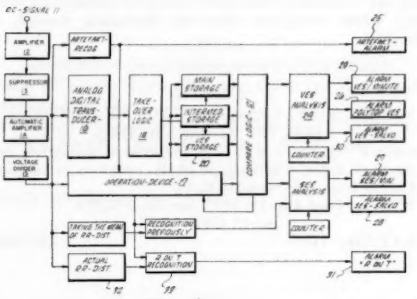
and indicator means electrically connectable to the electrical lead means at another location to indicate the correct electrical lead means from among other adjacent electrical lead means.



3,829,766
ELECTROCARDIOGRAM MONITORING APPARATUS

Rudolf Herz, Denzlingen, Germany, assignor to Fritz Hellige, & Co., G.m.b.H., Breisgau, Germany

Filed Apr. 2, 1973, Ser. No. 346,913
Claims priority, application Germany, Apr. 11, 1972, 2217235
Int. Cl. G01r *23/16*
U.S. Cl. 324—77 R **9 Claims**



A monitoring apparatus is disclosed for automatically analyzing electrocardiograms in order to detect myocardial infarction. The apparatus for observing heart rhythm disturbances comprises a logic system which establishes a sequence of timed windows occurring during scanned heartbeat intervals. The logic system further electrically records and stores the windows in which electrocardiogram threshold levels occur over several regular heartbeat intervals to provide a normal, reference pattern. After which, the logic system electronically determines the window or windows in which the threshold levels occur in subsequent heartbeat cycles. A compare logic system is then provided to compare the determined window or windows with the normal, reference pattern Finally, an alarm system is provided that is responsive to any variations or non-identities of the compared patterns.

3,829,767
RADIO COMMUNICATION SYSTEM FOR USE IN CONFINED SPACES AND THE LIKE

Paul Delogne, 42 Avenue Adrien Bayet, Brussels, Belgium

Continuation-in-part of Ser. No. 109,367, Jan. 25, 1971, abandoned. This application June 28, 1973, Ser. No. 374,654
Claims priority, application Belgium, Feb. 18, 1970, 85381; Aug. 3, 1972, 120619
Int. Cl. H04b *1/00*
U.S. Cl. 325—26 **13 Claims**

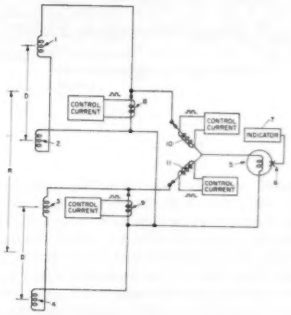
A radio communication for use within confined spaces including at least one coaxial-type cable in which electric signals are propagated at a reduced attenuation, such signals being screened by the outer conductor of the cable, annular transverse gaps in the outer conductor forming interruptions used to facilitate passage of radiated electromagnetic waves and provide communication with mobile or possibly fixed radio transmitters and receivers not directly connected to the cable.

Low insertion loss of the gaps is achieved by impedance matching elements being positioned thereon. A rigid low-loss dielectric material casing may house the impedance matching elements and encompass the transverse gap. The casing may be longitudinally split and formed of detachable halves to permit access thereinto so as to facilitate replacement and exchange of the impedance matching elements.

3,829,768
SUPERCONDUCTING GRADIOMETER FOR MEASURING FIRST AND SECOND DERIVATIVES OF A MAGNETIC FIELD

James Nicol, Dover, Mass.; Sidney Shapiro, Rochester, N.Y., and Martyn F. Roetter, Cambridge, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 4, 1973, Ser. No. 394,430
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **9 Claims**



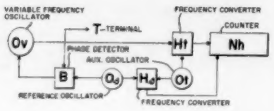
The first and second derivatives of a magnetic field are measured by two pairs of spaced superconducting sensing coils which are aligned along a common axis with the individual coils of each pair connected in electrical opposition so that the net current flowing therethrough is proportional to the gradient of the magnetic field in which these pairs are disposed. Superconducting switches associated with these coils are selectively operated to direct these net currents through a superconducting field coil during mutually exclusive time intervals. The resultant magnetic field is measured by a magnetometer which provides an indication of the average value of the magnetic field gradient and the second derivative thereof.

3,829,769

FREQUENCY MEASURING APPARATUS

Hitoshi Ashida, Gyoda, Japan, assignor to Takeda Riken Industry Company Limited, Tokyo, Japan

Filed Jan. 22, 1973, Ser. No. 325,582
Claims priority, application Japan, Jan. 22, 1972, 47-8073
Int. Cl. G01r 23/14
U.S. Cl. 324—79 D 4 Claims



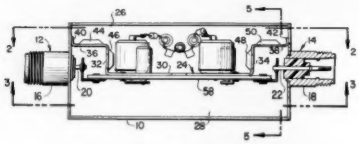
This invention relates to a frequency measuring apparatus whereby a local oscillation frequency is determined by positively observing the higher harmonic number and the superhigh frequencies ranging from several to several scores of gigahertzes are precisely measured by using this higher harmonic number measuring apparatus.

3,829,770

DIRECTIONAL COUPLER FOR TRANSMISSION LINES

Harold E. Stevens, Lyndhurst, Ohio, assignor to Coaxial Dynamics, Inc., Cuyahoga, Ohio

Filed Oct. 26, 1971, Ser. No. 192,529
Int. Cl. G01r 21/04; H01p 5/14
U.S. Cl. 324—95 6 Claims



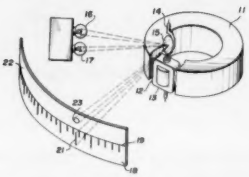
A directional coupler for detecting and measuring unidirectional wave signals propagated along a transmission line. The coupler includes an insulative board, having a first layer of conductive material secured to one of the faces of the insulative board and a second layer of conductive material secured to the other face of the insulative board to define a predetermined impedance with respect to a ground plane partition member. A coupling element comprising a third layer of conductive material is also secured to the other face of the insulative board to define a predetermined impedance with respect to the second layer of conductive material. The ground plane partition member and the second layer of conductive material serve as a section of the transmission line. The coupling element is connected to a signal measuring network for developing an output signal having a value representative of the value of an unidirectional wave signal propagated along the transmission line. The assembly including the insulative board and plural conductive layers is mounted in a housing, and the partition member is electrically bonded to four of the side walls of the housing in order to define a pair of chambers within the housing and serves the function of substantially preventing the passage of electrical fields between these chambers.

3,829,771

DEVICE FOR DISPLAYING MEASURED VALUES

Franz Burkhardt, Therwil, and Konrad Hammacher, Kaiseraugst, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 12, 1971, Ser. No. 171,222
Claims priority, application Switzerland, Aug. 25, 1970, 12636/70
Int. Cl. G01r 13/00
U.S. Cl. 324—96 11 Claims



An apparatus for displaying or indicating the trend or amplitude of fluctuation of an analogically indicated scalar measurement comprising a substance layer on the scale surface of an indicator means, which substance visibly undergoes a reversible alteration with a change in environmental conditions, the reversion of the visible alteration displaying a time-delay when compared with the formation thereof, is described.

3,829,772

LOAD SURVEY RECORDER FOR MEASURING ELECTRICAL PARAMETERS

Norman F. Marsh; Gary W. Morand, both of Springfield, and David G. Sokol, Chatham, all of Ill., assignors to Sangamo Electric Company, Springfield, Ill.

Filed Apr. 19, 1973, Ser. No. 352,551
Int. Cl. G01r 13/04
U.S. Cl. 324—113 18 Claims

A survey recorder for measuring electrical loads and providing a magnetic tape record of data with time reference signals in format capable of providing computer compatible information. The data recording circuit utilizes a light emitting diode with a phototransistor to determine each quantum measurement by the meter, and a trigger circuit driven by the phototransistor feeds a solid state divider circuit which is programmable to provide various I/O pulse ratio outputs to the data recording head. A power outage circuit detects outages which are greater than a predetermined duration and provides distinctive pulses to a time recording circuit to effect a recognizable format on the magnetic tape which identifies the power outage.

3,829,773

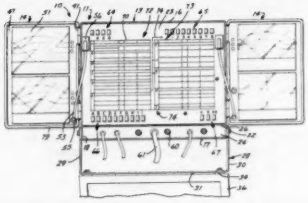
ANALYZER PANEL

William A. Nigg, Kalamazoo, Mich., assignor to Allen Electric and Equipment Company, Kalamazoo, Mich.

Filed Dec. 2, 1971, Ser. No. 204,085
Int. Cl. G01r 1/00, 1/04
U.S. Cl. 324—114 11 Claims

Apparatus for automotive testing includes a cabinet including a housing for electrical test circuitry. The housing has a

front wall defined by at least one recessed panel. The panel carries, in full view of the operator, instructions for making a series of tests on automotive vehicles and at least one series of switch actuating push-buttons visually keyed to such instructions and disposed adjacent the edges of the panel. Meter cases are hinged to the opposite ends of the circuitry housing



and have recessed front walls which carry meters electrically connected to the circuitry in the housing. The meter cases are pivotable to close the cabinet, that is, to cover said panel, and thereby also cover said meter faces, when the apparatus is not in use. When the cabinet is opened for use, the meter faces, push-buttons and instructions are visible to the operator of the apparatus. A bracket is provided for supporting the cabinet.

3,829,774

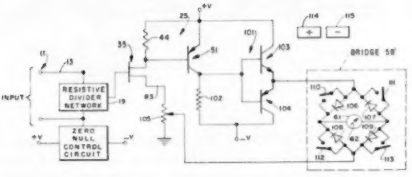
MICROPOWER AUTOPOLARITY VOLTMETER

Walter J. Cerveny, Lima, Ohio, assignor to Triplett Corporation, Bluffton, Ohio

Continuation-in-part of Ser. No. 70,369, Sept. 8, 1970, Pat. No. 3,746,984. This application May 30, 1972, Ser. No. 257,683

Int. Cl. G01r *15/08, 19/14*

U.S. Cl. 324—115 **23 Claims**



A highly sensitive circuit for an electrical instrument for causing the indicator on a meter to read linearly upscale for positive or negative DC signals, AC signals, or a combination of AC or DC signals applied to the input of the circuit. The circuit may also operate in a micropower mode with sufficiently low current drain to permit the instrument to operate continuously for a time nearly equal to the shelf life of the battery power source. In a first embodiment, the input signal to be measured is provided to an input circuit which includes a resistive divider network in circuit with a null control circuit for selecting the range of input signals. A selected proportion of the input signal is applied to the input of a field effect transistor (FET). The output from the FET is applied to the input of an amplifying transistor having its output in circuit with a bridge network. The bridge network includes a pair of oppositely poled diodes in circuit with fixed resistors so that a first diode conducts for positive signals and a second diode conducts for negative signals from the transistor. A meter is connected in circuit with the diodes and is arranged so that the indicator on a meter reads upscale whether the output of the amplifier comprises positive or negative DC signals or AC signals or a combination of both. A feedback circuit includes a resistive network in circuit with the bridge for selecting the appropriate circuit sensitivity for the function to be performed by the circuit. The output from the resistive network in the feedback path is connected to a pair of transistors connected in a Darlington configuration, the output of which is connected to the FET. The input circuit also includes a switching circuit for providing a coupling capacitor in series circuit with the input signals to block DC when AC signals are being measured, then to provide a low pass filter in circuit with the input signals when DC signals are being measured. The circuit according to the invention may be also used to measure resistance and current. In the micropower power mode, the FET and the amplifying transistor are each operated in a starved mode. The starved pair of transistors are coupled to the diode bridge network through a complementary emitter follower amplifier to drive the bridge circuit. An alternate bridge circuit comprises switches in circuit with each of the diodes in a 4-diode bridge so that when these switches open, the circuit will operate in the autopolarity mode. The closure of respective pairs of switches will cause the instrument to operate in either the positive or negative mode. In one embodiment for measuring resistance, a low power "ohms" measurement is provided by substituting a low current regulator power source for the normal battery in the probe circuit. In addition, the gain of the amplifier stages is increased. The resulting circuit enables in-circuit resistance measurements in which the voltage applied to the circuit to be tested is sufficiently low that unwanted biasing of semiconductive junctions in the test circuit is avoided.

The method of using the circuit of the invention is also disclosed wherein the indicator on the meter is caused to indicate a null reading in the absence of an input signal to the circuit by adjusting the null control circuit and sensing the indicator on the meter until a null is reached. The null control circuit may also be used to provide a storage feature for the circuit.

3,829,775

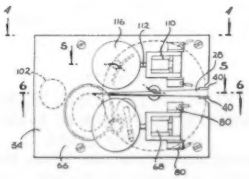
METER WITH ELECTRICALLY SELECTABLE SCALES

Gordon L. Brock, 20701 Beach Blvd., Space No. 31, Huntington Beach, Calif. 92648

Continuation-in-part of Ser. No. 221,667, Jan. 28, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,571

Int. Cl. G01r *15/08, 17/06*

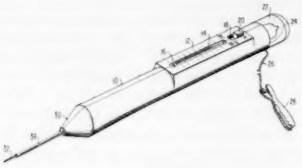
U.S. Cl. 324—115 **10 Claims**



A meter with electrically selectable scales which allows the remote selection of both the electrical signals to be measured and the corresponding scale on which the measurement is to be made. The indicating mechanism is comprised of a band transparent at one end and partially opaque at the other end. The junction between the transparent and opaque areas serves as a pointer or indicator. A spring take-up means at one end of the band maintains the band in tension and a servo drive take-up system at the other end of the band moves the band in unison with a feedback potentiometer to balance a bridge network. A cylindrical member located behind the band contains

a plurality of scales thereon. A drive motor rotates the cylinder about its axis, with a solenoid locking the cylinder at the electrically selected scale and de-energizing the drive motor. The selection of electrical signals to be measured and the appropriate scale for its measurement are selected in unison through a gang switch which may be remotely located. An alternate embodiment utilizing a single drive motor for both the cylindrical members and the band is disclosed.

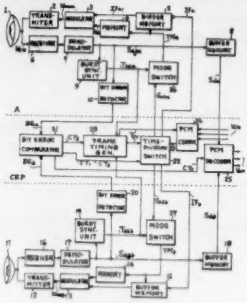
3,829,776
PEN TYPE VOLTMETER
Elpidio Lozoya, 209 E. Railway, El Paso, Tex. 88045
Filed July 31, 1973, Ser. No. 384,224
Int. Cl. G01r *13/36, 1/06*
U.S. Cl. 324—122 **10 Claims**



A relatively compact voltage tester generally in the form of a pen or pencil adapted to be carried in a shirt pocket or the like and including a tubular casing with a spring biased connecting rod attached to a metallic probe, both being movably mounted in the casing with the probe projecting from one end thereof. The probe is applied to the circuit point to be tested whereupon the voltage appearing thereat is coupled across a selected strip resistor also carried in the casing. The rod is mechanically connected to a sliding contact member positioned against the strip resistor which then acts as a voltage pick off. The selected strip resistor and contact member comprise a potentiometer and is operable such that as the probe is depressed against the spring by pushing the casing toward the circuit point, a neon lamp lights at a certain depressed position. A pointer also coupled to the rod acts in combination with a calibrated scale on the outer surface of the casing to provide a reading of the voltage applied across the potentiometer.

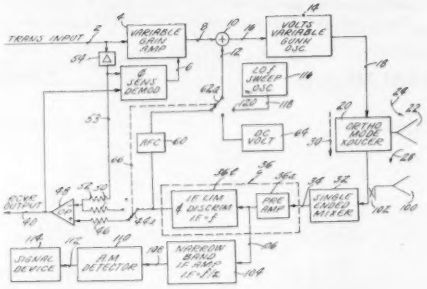
3,829,777
CONTROL SYSTEM FOR DIVERSITY TRANSMISSION IN A TERRESTRIAL STATION OF SATELLITE COMMUNICATION
Takuro Muratani; Hideki Saito, and Tatsuo Watanabe, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-To, Japan
Filed Feb. 2, 1973, Ser. No. 329,206
Claims priority, application Japan, Feb. 10, 1972, 47-13976
Int. Cl. H04b *7/20*
U.S. Cl. 325—4 **3 Claims**

A control system for diversity transmission from a terrestrial station which performs time-division multiple access to a satellite communication repeater through a selected one of a plurality of transmission paths established between the satellite and the terrestrial station, in which the transmission paths are alternately selected in synchronism with a signal received over a selected one of the transmission paths when the error rate of all the transmission paths is lower than a reference threshold value, and in which a selected one of the transmission paths having the lowest error rate is continuously used



when the error rates of the transmission paths are not all lower than the reference threshold value.

3,829,778
CALL APPARATUS IN A SINGLE OSCILLATOR MICROWAVE TRANSCEIVER
Salvatore Amoroso, Jr., Fairfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 26, 1973, Ser. No. 345,141
Int. Cl. H04b *1/40*
U.S. Cl. 325—17 **10 Claims**



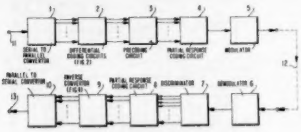
Call apparatus, in a single oscillator transceiver in which a portion of the transmitter oscillator energy is mixed with received energy so as to provide received signals on an intermediate frequency carrier, for amplification in an FM receiver, includes a broad beam antenna coupling energy into the transmission line between an information transmit/receive antenna and the information FM receiver channel. A calling signal received by the broad beam antenna is passed through the same single ended mixer and preamplifier as are received information signals; from the preamplifier, calling signals are passed to a narrow band AM receiver having an IF frequency which is one half of the frequency of the IF amplifier/limiter of the information receiver channel; the output of the narrow band AM receiver feeds a detector which operates a signaling device. Systems employ pairs of such transceivers, wherein one normally transmits at a frequency higher by the IF frequency than the other, such that each can generate its IF frequency from a portion of its transmitter oscillator output. To call another transceiver, the frequency of the transmitter oscillator is swept at a low frequency rate about a frequency half way between the normal transmit/receive frequencies.

3,829,779

MULTILEVEL CODE TRANSMISSION SYSTEM

Hiroshi Fujimoto, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 1, 1973, Ser. No. 328,809
Claims priority, application Japan, Feb. 4, 1972, 47-13015
Int. Cl. H04b 1/62, 1/66
U.S. Cl. 325—38 A 5 Claims



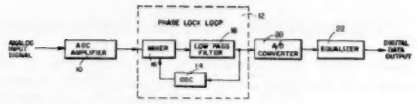
A multilevel code transmission system is made capable of transmission and reception of correct signals even if the demodulation carrier is 180 degrees out of phase by dividing the levels of a multilevel code to be transmitted into pairs and subjecting the transmission signal to differential coding, pair by pair. At the receiver, the levels are again divided into pairs, and the differentially coded signal is inversely converted.

3,829,780

DATA MODEM WITH ADAPTIVE FEEDBACK EQUALIZATION FOR CANCELLATION OF LEAD-IN AND TRAILING TRANSIENTS

Stanley A. White, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 14, 1972, Ser. No. 306,389
Int. Cl. H03h 7/36
U.S. Cl. 325—42 15 Claims



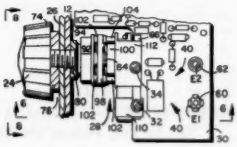
An adaptively equalized data modem affords cancellation of both lead-in and trailing transients, affording optimum correction of distortion in, and resulting intersymbol interference of, digital data received over a transmission channel. Adaptive feedback equalization is employed, as known heretofor, for adaptively learning the impulse response of the transmission channel, through cross-correlation of previously received data bits with the signal currently received. A correction signal is derived by multiplying the learned impulse response values by the stored data bits and summing the products. The correction signal is utilized in a feedback path to cancel trailing transients. Preliminary data decisions are produced in an input delay line system for multiplying with corresponding ones of the learned impulse response values, to produce cancellation terms corresponding generally to lead-in transients. A succession of preliminary data decisions of any desired number may be produced for developing a desired number of lead-in terms, and thereby to afford a desired degree of accuracy in the cancellation of the lead-in transients. Whereas the preliminary data decisions are discarded, the lead-in transient cancellation terms developed in accordance therewith, and the trailing transient cancellation terms developed through adaptive feedback equalization, provide for cancellation of both lead-in and trailing transients and a high degree of accuracy in recovery of the transmitted digital data.

3,829,781

AIRCRAFT EMERGENCY WARNING SYSTEM

Richard A. Letson, Santa Ana, and Walter P. Cormey, Newport Beach, both of Calif., assignors to Pacific Communications, Inc., Santa Ana, Calif.

Filed June 19, 1972, Ser. No. 263,873
Int. Cl. H04b 1/02
U.S. Cl. 325—115 11 Claims



An aircraft emergency warning system comprising a radio signal generator having an integral power source, such as a battery, and an antenna for sending said signal. The signal is initiated by a switch which operates manually or upon "G" forces being exerted thereon, such as those forces encountered in a crash of an aircraft in which the emergency system is implaced.

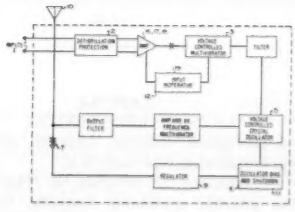
The emergency system can be integrally tested by a "test means" in the form of the signal being "effectuated" and operating a test light. When the system is armed, a crash causes "G" forces during the crash to turn on the warning system through the switch. The switch comprises a relay which is closed by a first magnet. The first magnet has its forces normally shunted through an armature. Upon crash the armature is latched by a second magnet which holds it in place, causing said first magnet to close the relay which completes a circuit for issuing an emergency signal.

3,829,782

ELECTROCARDIOGRAPH TELEMETRY SYSTEM HAVING CIRCUITRY FOR INDICATING INOPERATIVE CONDITIONS

Richard F. Dillman, Lexington; James L. Larsen, Needham Heights, and Alfred M. Nardizzi, Dedham, all of Mass., assignors to Hewlett-Packard Company, Palo Aito, Calif.

Division of Ser. No. 207,859, Dec. 14, 1971, Pat. No. 3,768,017. This application June 25, 1973, Ser. No. 373,552
Int. Cl. H04b 1/04
U.S. Cl. 325—186 2 Claims



Special circuitry in the transmitter of an electrocardiograph (ECG) telemetry system detects various malfunctions of the system and changes the transmitted signal to indicate their

presence to the system receiver. When the transmitter detects that an input electrode has become detached from the patient, it changes the frequency of the subcarrier signal to indicate this problem to the receiver. The receiver monitors the subcarrier frequency and flashes an alarm light when the frequency corresponds to the electrode inoperative condition. When the voltage output from an aging battery becomes too low to adequately energize the transmitter, special circuitry stops the transmission of signals from the transmitter. When the receiver cannot detect a transmitted signal, it indicates that either the battery needs replacement or the transmitter is out of range.

3,829,783

GENERATOR FOR GENERATING A NUMBER OF SELECTED FREQUENCIES

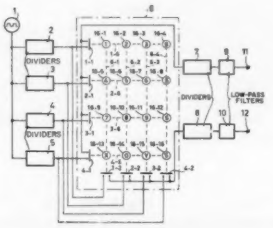
Gradus Cornelis Groenendaal, Emmasingel, Eindhoven; Hans Cool; Jacob De Vos, both of Jan ver der Heydenstraat 41, Hilversum, and Eduard Willem Van Zuuren, Emmasingel, Eindhoven, all of Netherlands

Filed Feb. 26, 1973, Ser. No. 335,673

Claims priority, application Netherlands, Mar. 4, 1972, 7202908

Int. Cl. H03b *19/00*

U.S. Cl. 328—14 **8 Claims**



A generator for generating a number of selected frequencies, comprising a pulse oscillator and a number of dividers which are connected thereto, a second number of dividers which also coupled to the former dividers via a switching network in order to adjust, under the control of the switching network, dividends which produce desired combinations of frequencies derived from the oscillator frequencies, in particular tone frequencies for tone pushbutton selection signalling, the dividers of the second group also being binary-to-digital signal converters to which first-order RC-networks are connected in order to suppress higher harmonics.

3,829,784

SWITCHING DEVICE

Kamran Eshraghian, Hillcrest, Australia, assignor to U.S. Philips Corporation, New York, N.Y.

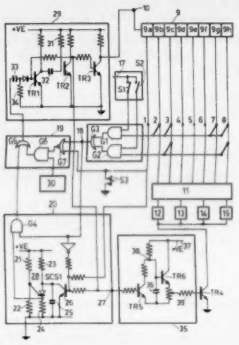
Filed Nov. 29, 1972, Ser. No. 310,232

Claims priority, application Australia, Nov. 29, 1971, 7205/71

Int. Cl. H03k *17/28*

U.S. Cl. 328—130 **5 Claims**

A switching and timing device comprising a series of control points each of which is associated with a combination of switching. Clock pulses cause actuation information to be advanced to control points in sequence, at either low rates for performance of functions, or at high rates to omit functions associated with selected control points. Operation of switching elements is inhibited for high pulse rates.



3,829,785

CIRCUIT ARRANGEMENT FOR DIGITAL FREQUENCY MEASUREMENT

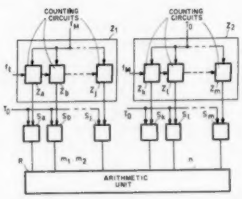
Gerd Schroder, and Dietrich Meyer-Ebrecht, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,395

Claims priority, application Germany, Apr. 28, 1972, 2220878

Int. Cl. G01r *23/00*

U.S. Cl. 328—130 **9 Claims**

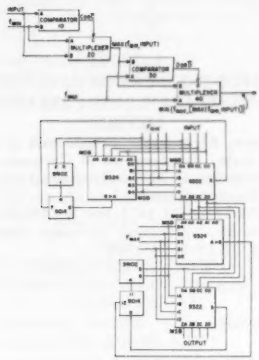


For the measurement of the unknown frequency or period of a measuring signal within a given measuring time interval the number of full cycles of the measuring signal within the measuring time interval are counted in a first group of counting circuits and the fractions of the measuring signal cycles at the beginning and at the end of the measuring time interval are counted with the aid of a clock pulse train of fixed frequency in a second group of counting circuits. For a measuring signal of high frequency, the capacity of the first group should be large, whereas that of the second group need only be small, because the fractions at the beginning and at the end of the measuring time interval are correspondingly small. For a measuring signal of low frequency this is just the other way round, so that the total number of counting circuits is independent of the frequency and is only determined by the required resolution. When these counting circuits are divided into groups in accordance with the frequency of the measuring signal, the required number of counting circuits can be substantially reduced. In order to ensure that the values for determining the unknown frequency are obtained within the measuring time interval only, the counting circuits may be divided into three groups, so that the subsequent computing equipment may also be reduced considerably.

3,829,786
DYNAMIC CONSTRAINT OF A CONTROL SIGNAL

Robert E. Hoffman, Erie, Pa.; John A. Cline; Christopher S. Fuselier, and John D. D'Atre, all of Pittsfield, Mass., assignors to General Electric Company

Filed Feb. 20, 1973, Ser. No. 334,118
Int. Cl. H03k 5/20
U.S. Cl. 328—147 6 Claims

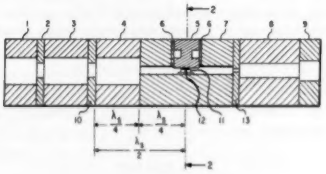


The invention relates to limiting circuits and more particularly to circuits which limit a signal between a minimum and maximum value, wherein the minimum and maximum limits may make dynamic changes. The circuit of this system utilizes electronic comparator and multiplexer circuitry to constrain the output of the circuit to equal the input signal between upper and lower limits. These upper and lower limits may be varied while the circuit is in operation.

3,829,787
BROADBAND MILLIMETER WAVE PARAMETRIC AMPLIFIER

James J. Whelehan, Jr., Smithtown, and Erich Henry Kraemer, Huntington, both of N.Y., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Nov. 29, 1973, Ser. No. 420,279
Int. Cl. H03f 7/04
U.S. Cl. 330—4.9 9 Claims

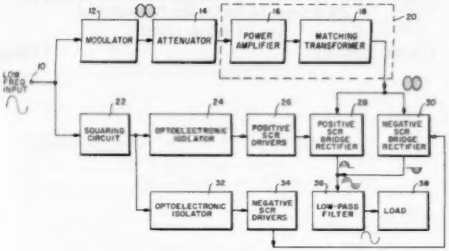


A millimeter wave parametric amplifier including a series self-resonant varactor and a parallel resonant transmission cavity compensating the off-resonant variation in varactor reactance to extend the bandwidth of the amplifier. A low pump frequency is used, placing the idler frequency below the signal frequency. A waveguide beyond cutoff at the idler frequency, enclosing the varactor, minimizes idler power loss and aids in tuning the varactor to the idler frequency.

3,829,788
ELECTRIC POWER AMPLIFICATION AT LOW FREQUENCIES

Robert E. Ford, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1972, Ser. No. 317,324
Int. Cl. H03f 3/38
U.S. Cl. 330—10 8 Claims

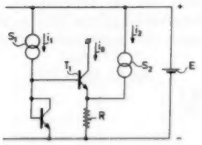


A modulator-demodulator amplifier having high power gain at frequencies from D.C to 200 Hz. The low frequency signal to be amplified is full wave rectified (producing half cycles at twice the low frequency) and subsequently used to modulate a higher frequency signal which falls in the band pass of a conventional power amplifier. After amplification, the modulated signal is rectified so as to produce alternate positive and negative half cycles of the original low frequency. The signal is then fed to a low pass filter which retrieves the envelope of the modulated signal which constitutes an amplified version of the low frequency signal. This concept is also applicable to higher frequency amplification, i.e., radio and video frequency amplifiers, to extend their response to include the audio frequency range.

3,829,789
MICROAMPERE CURRENT SOURCE

Cornelis Mulder, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 100,205, Dec. 21, 1970, abandoned.
This application Dec. 6, 1972, Ser. No. 312,484
Int. Cl. H03f 1/32
U.S. Cl. 330—23 3 Claims



A microampere current source for an integrated circuit comprising a first d-c current source for providing an input control current of at most 10 μa, first and second semiconductor circuits having substantially equal emitter characteristics, a resistor coupled to said first and second semiconductor circuits to form a closed loop and a second d-c current source coupled to the loop. The first semiconductor circuit comprises a rectifier and is coupled to the second semiconductor circuit so as to provide for the passage of the input control current through the base-emitter path of the semiconductor circuits. The second d-c current source provides a reference potential

to the emitter of the second semiconductor circuit and supplies a current to the resistor of such magnitude that the voltage drop across the rectifier exceeds the base-emitter voltage of the second semiconductor circuit by between 20 and 540 millivolts.

3,829,790

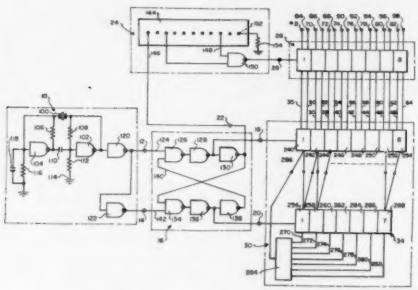
CLOCK DISTRIBUTION CIRCUIT

Max S. Macrander, Warrenville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 14, 1973, Ser. No. 397,544

Int. Cl. H03b *27/00*

U.S. Cl. 331—61 **7 Claims**



A clock distribution circuit that generates consecutive timing pulses of a first predetermined time duration on a first plurality of output lines and a corresponding number of timing pulses of a second predetermined duration that is less than the first time duration on a second plurality of output lines. The leading edge of every timing pulse of the second time duration is nearly coincident with the leading edge of a corresponding timing pulse of the first predetermined duration. To generate the two sets of timing pulses, the clock circuit is provided with a crystal controlled oscillator, a phase feedback stage, a dual rank shift register, delay gating, feedback gating and feed forward gating arrangements.

3,829,791

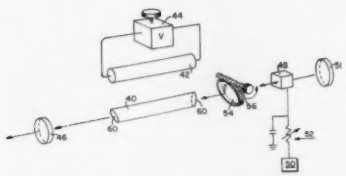
VARIABLE PULSE LASER

Jacob Schwartz, Arlington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Continuation of Ser. No. 847,795, July 23, 1969, abandoned, which is a continuation-in-part of Ser. No. 630,861, April 14, 1967, abandoned. This application Sept. 8, 1971, Ser. No. 178,830

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 **4 Claims**



A solid state laser having a non linear absorption element inserted in the optical path between the emissive rod and a reflecting surface of the Fabry-Perot cavity. The absorption element is preferably transparent to radiation at the fundamental frequency below a selected threshold. Above the threshold the element increases its absorption as the intensity of the radiation at the fundamental frequency increases. The amplitude, shape and duration of the laser output pulses are controllably variable through adjustment of the pump intensity, rotation of the non linear absorption element and variation of the turn-on time of the laser Q-switch.

3,829,792

METHOD FOR THE INCREASE OF OUTPUT OF GAS LASERS AND APPARATUS FOR CARRYING OUT THE METHOD

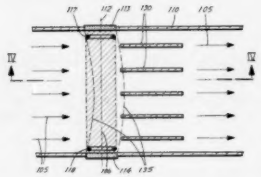
Gunthard Born; Klaus-Dieter Erben, both of Munich, and Friedbert Mohr, Fronberg, all of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munchen, Germany

Filed Sept. 20, 1971, Ser. No. 182,094

Claims priority, application Germany, Sept. 24, 1970, 2047187; Oct. 27, 1970, 2052731

Int. Cl. H01s *3/22, 3/04*

U.S. Cl. 331—94.5 PE **7 Claims**



A method and apparatus for generating a gas laser. Gas is caused to circulate in a closed cycle and circulates transversely through a resonant zone positioned on the laser axis. Gas flows through the resonant zone at subsonic speed and under simultaneous electric excitation. Magnetic pole pieces are arranged adjacent the resonant zone for controlling and stabilizing the discharge path of the laser. In the apparatus aspects of the invention an evacuated flow tunnel for closed circuit circulation of gas is provided with a resonant zone transversely across the flow path. Such zone is arranged with electric excitation means and resonator mirrors as required. Pole pieces are provided adjacent the resonant zone for guiding and stabilizing a discharge path of the laser. Blower and cooling means are also provided in the gas flow path. In a further embodiment, flow plates are aligned with the gas flow direction and placed immediately downstream from the resonant zone to assist in preventing the gas discharge of the laser path from bending out of the predetermined position.

3,829,793

METAL ATOM OXIDATION LASER

Reed J. Jensen; Walter W. Rice, and Willard H. Beattif, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

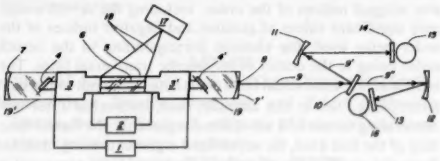
Filed Nov. 7, 1972, Ser. No. 304,578

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 P **28 Claims**

A chemical laser which operates by formation of metal or carbon atoms and reaction of such atoms with a gaseous oxidizer in an optical resonant cavity. The lasing species are

diatomic or polyatomic in nature and are readily produced by exchange or other abstraction reactions between the metal or carbon atoms and the oxidizer. The lasing molecules may be metal or carbon monohalides or monoxides.



3,829,794

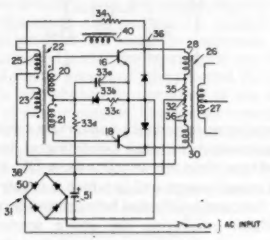
CIRCUIT FOR REDUCING THE DIRECT CURRENT COMPONENT OF AN ALTERNATING CURRENT OUTPUT SIGNAL

George A. Gautherin, Woodside, N.Y., assignor to Lambda Electronics Corporation, Melville, N.Y.

Continuation-in-part of Ser. No. 121,064, March 4, 1971. This application Nov. 30, 1972, Ser. No. 310,788

Int. Cl. H02m *7/52*

U.S. Cl. 331—113 A **16 Claims**



A feedback arrangement for removing the net direct current component from the output transformer of an inverter due to an unbalanced volt-time characteristic of the output signal, wherein a direct current signal is used to adjust the respective conduction periods of the inverter switching devices. A portion of the total output signal in the primary of the output transformer is sampled by small resistors and filtered to derive an essentially direct current signal that excites an auxiliary winding magnetically coupled to the core of a saturable input transformer so as to change the core operating point and thereby to alter the switching control signal in a manner tending to reduce the direct current component of the output signal.

3,829,795

CRYSTAL OSCILLATOR USING FIELD EFFECT TRANSISTORS IN AN INTEGRATED CIRCUIT

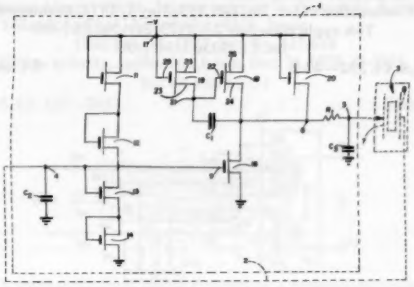
Jack L. Minney, Long Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 171,670, Aug. 13, 1971, abandoned. This application June 18, 1973, Ser. No. 371,012

Int. Cl. H03b *5/36*

U.S. Cl. 331—116 R **9 Claims**

A crystal controlled oscillator circuit including a constant current source which supplies current to a field effect transistor which amplifies an input signal to provide an output signal to a load which includes a crystal in a feedback path to an input terminal. A bias circuit is connected to the gate electrode of the field effect transistor amplifier.



3,829,796

ELECTRONICAL AMPLITUDE MODULATOR, IN PARTICULAR FOR MODULATING SIGNALS INTENDED FOR NAVIGATION PURPOSES

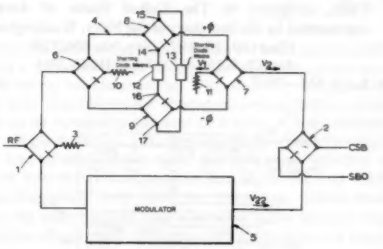
Petter Magnar Bakken, Trondheim, Norway, assignor to Elektronikklaboratoriet ved NTH, Gloshaugen, Trondheim, Norway

Continuation-in-part of Ser. No. 28,788, April 15, 1970, abandoned. This application July 31, 1972, Ser. No. 276,800

Claims priority, application Norway, Apr. 16, 1969, 1544/69

Int. Cl. H03c *1/52*

U.S. Cl. 332—44 **6 Claims**



An electronic amplitude modulator for modulating low frequency signals on the radio or high frequency signals from a transmitter. The associated antenna system can be supplied with the signals which are required according to the conventional structure of the system. Means are provided for bringing the amplitude of the output signal to a number of predetermined values having such duration and being in such succession that the desired envelope of the output signal is obtained with sufficient approximation. Such means comprise a transmission line adapted to be short-circuited electronically by means of shorting devices located at preselected fixed points along the line.

3,829,797

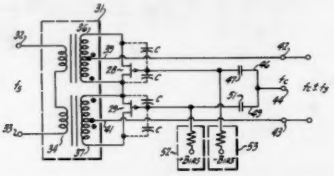
MODULATOR AND METHOD

Edward M. Karkar, San Francisco, and Nicolas Kovalevski, Menlo Park, both of Calif., assignors to Karkar Electronics, Inc., San Francisco, Calif.

Continuation of Ser. No. 248,953, May 1, 1972, abandoned. This application July 23, 1973, Ser. No. 381,490

Int. Cl. H03c *1/54, 1/38*

U.S. Cl. 332—43 B **5 Claims**



An amplitude modulator using an FET, or MOSFET and a coupling and phase splitting device capable of accepting both single ended and balanced inputs (like for example, a differential amplifier or a center tapped choke coil, or a transformer). The source and drain terminals are connected to the differential inputs (outputs) of the device, and the signal to the single ended input of the device. The carrier is applied to the gate terminal of the FET or MOSFET. The switching action of the device is equally efficient for both single ended and differential inputs (outputs). However, the carrier leak voltage is being applied simultaneously to both terminals of the differential input and thus suppressed in the output by virtue of high suppression of longitudinal (common) mode pertinent to devices with differential inputs (outputs). Other modulators are disclosed including a double balanced modulator using two complimentary field effect transistors and a double balanced modulator using two field effect transistors of the same conductivity type.

3,829,798

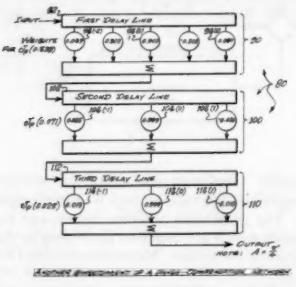
CASCADE TRANSVERSAL-FILTER PHASE-COMPENSATION NETWORK

George W. Byram, and Jeffrey M. Speiser, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 15, 1973, Ser. No. 406,720

Int. Cl. H03h *7/28, 7/30;* **H04b** *3/04*

U.S. Cl. 333—70 T **3 Claims**



A phase-compensation network, capable of modifying the phase response of a filter or network while leaving unchanged the amplitude response, comprising a cascaded combination of simple transversal filters, each of which comprises a delay line; at least one tapped weighted element whose input is connected to the delay line; and a signal summer whose input is connected to the outputs of the weighted elements. The elements of each simple transversal filter correspond to the values of the Bessel function of fixed argument and for successive integral indices of the order, including the zeroth order, only significant values of positive and negative indices of the order being used, the element corresponding to the zeroth order being in the center of its specific transversal filter. The output of one transversal filter constitutes the input to the next succeeding filter in the cascade, each transversal filter corresponding to one of a set of fixed arguments of a Bessel function of the first kind, the set of fixed arguments being obtained from the coefficients of a phase function when expressed in Fourier series form.

3,829,799

SEMICONDUCTOR IMPEDANCE CIRCUIT AND OSCILLATOR USING THE SAME

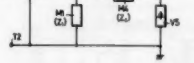
Takeo Miyata; Seiya Hamada, both of Kanagawa-ken; Katsuaki Inoue, and Mikito Baba, both of Tokyo, all of Japan, assignors to Mitsumi Electric Company, Tokyo, Japan

Filed Aug. 23, 1972, Ser. No. 283,188

Claims priority, application Japan, Aug. 28, 1971, 46-66224; Aug. 17, 1972, 47-82527; Aug. 17, 1972, 47-82528; Mar. 22, 1972, 47-28661

Int. Cl. H03b *7/06;* **H03h** *11/00*

U.S. Cl. 333—80 T **9 Claims**



A semiconductor impedance conversion circuit which employs a semiconductor circuit consisting of two transistors, three impedance elements or circuits, a DC voltage source and a DC current source and in which a negative impedance conversion function is obtained between two terminals.

An oscillator employing the above semiconductor impedance conversion circuit and an oscillating capacitor.

3,829,800

HF COAXIAL PLUG CONNECTOR

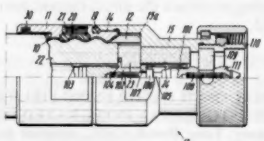
George Spinner, ErzgieBereister 33, 8 Munich 2, Germany

Filed June 2, 1972, Ser. No. 259,160

Claims priority, application Germany, June 4, 1971, 2127927

Int. Cl. H01p *1/04;* **H02q** *15/08*

U.S. Cl. 333—97 R **12 Claims**



A HF coaxial plug connector comprises a clamping ring which can be fixed on the outer casing of a cable. The connector has a conical machined out part, onto which the end of the cable casing is crimped and on the end of the cable casing a

cone with the same setting angle is axially clamped. The cone is formed by a pressure ring, separated from a head of the plug connector, and the pressure ring is adapted to be axially clamped by an end annular face of the head of the plug connector without carrying out a rotary movement in relation to the clamping ring.

3,829,801

SIGNAL SWITCHING AND DISTRIBUTING SYSTEMS

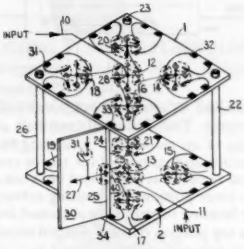
Michael John Priestly, Stockport, and Eric Cornthwaite, Denton, both of England, assignors to International Computer Limited, London, England

Filed Nov. 1, 1972, Ser. No. 302,706

Claims priority, application Great Britain, Nov. 2, 1971, 50,787/71

Int. Cl. H01p *5/02, 1/10*

U.S. Cl. 333—7 **2 Claims**



A signal distribution system for applying signals to a device under test is described. An input signal is applied to a centre point of a first group of four relays on a substrate. The group of relays are arranged so that the input signal may be switched to one of four similar groups of relays so that the input signal may therefore be switched by operation of the appropriate relays to one of sixteen outputs. The overall transmission path lengths from the input point to each output are equal to thus provide all the paths with the same electrical characteristics. Further similar substrates may be spaced from the first substrate and in this case a common output channel for all substrates may be provided on a connecting plane.

3,829,802

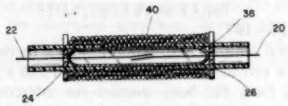
PROCESS FOR WINDING A COIL ON A REED SWITCH HAVING COIL FORM MEANS MOUNTED ON THE SWITCH CAPSULE

Richard L. Collette, Hoffman Estates, Ill., assignor to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Aug. 21, 1973, Ser. No. 390,316

Int. Cl. H01h *51/28*

U.S. Cl. 335—154 **8 Claims**



A coil is wound about an elongated glass capsule of a reed switch and held between plastic tubes attached to each end of the capsule. The plastic tubes extend over the opposite ends of the capsule and may be glued or fitted thereon. Flanges extend outward from the tubes and the coil is then wrapped on the capsule where it is maintained in position by the flanges. Outward extensions of the tubes protect the leads of the reed switch and correct concentricity tolerances on the glass capsule allowing use of conventional coil winding apparatus.

3,829,803

SEATING DETECTING DEVICE

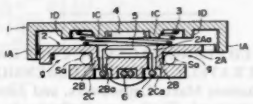
Tsuneo Maeda, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Dec. 10, 1973, Ser. No. 423,616

Claims priority, application Japan, Dec. 30, 1972, 48-3851

Int. Cl. H01h *3/14*

U.S. Cl. 335—205 **1 Claim**



A seating detecting device comprising a pressure receiving member of synthetic resin, a bracket of synthetic resin, a permanent magnet mounted in the pressure receiving member, and a magnetically actuated switch mounted in the bracket. The device is simple in construction, inexpensive and mechanically strong and can be very easily mounted on the seat spring in the seat of vehicles.

3,829,804

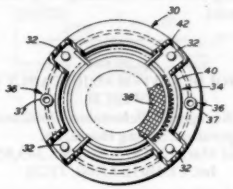
DEFLECTION YOKE MOUNTING ASSEMBLY

Floyd E. Alfrich, Waterloo, and Fred A. Hovey, Geneva, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 14, 1973, Ser. No. 415,717

Int. Cl. H01f *7/00*

U.S. Cl. 335—210 **6 Claims**



A deflection yoke mounting assembly for semi-permanently mounting a deflection yoke in operative position on the neck of a cathode ray tube is provided. The assembly comprises an annular tube ring having six spaced projecting hollow studs which is to be bonded to the rear of a tube. A yoke retainer ring carrying a deflection yoke has four hollow pockets which receive four of the hollow studs. A hardenable adhesive is dispensed into the hollow pockets and about the four studs and simultaneously into the two remaining hollow-studs whereby the yoke retainer ring is bonded to the annular tube ring and the annular tube ring is bonded to the tube in a single operation.

3,829,805

APPARATUS FOR MAGNETICALLY SUPPRESSING OSCILLATIONS

Heinrich Spodig, Netteberge 84, 4711 Bork, Westfalen, Germany

Filed Nov. 8, 1972, Ser. No. 304,759

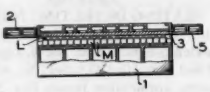
Claims priority, application Germany, Nov. 9, 1971, 2155532

Int. Cl. H01f *7/20*

U.S. Cl. 335—289 **18 Claims**

Oscillations and vibrations in a machine tool are suppressed by magnets generating a magnetic flux flowing through a sta-

tionary part and a movable part of the machine tool. The portions of the magnets from which concentrated magnetic flux



emanates, are not in contact with the stationary and movable parts, and are spaced by an air gap from the magnet housing.

3,829,806

SINTERED FERROMAGNETIC CORE HAVING ACCURATELY ADJUSTED DIMENSIONS

Franciscus Johannes Maria Lathouwers, and Jacob De Groot, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 184,696, Sept. 29, 1971, Pat. No. 3,775,841. This application Aug. 14, 1973, Ser. No. 388,256

Claims priority, application Netherlands, Oct. 9, 1970, 7014813

Int. Cl. H01f *27/24*

U.S. Cl. 336—83 **4 Claims**

A sintered ferromagnetic coil core having accurately adjusted dimensions obtained by coating the cores in a mold with a layer of coating material consisting of a binder and a ferromagnetic powder.

3,829,807

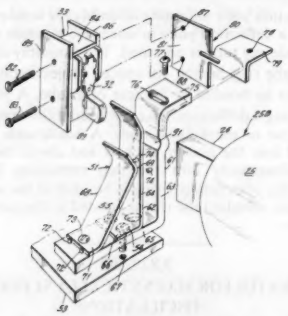
CONTACT HOLDER WITH ADJUSTABLY MOUNTED SWITCH

Keith Theophil Krueger, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Mar. 22, 1973, Ser. No. 343,851

Int. Cl. H01h *85/00, 71/20*

U.S. Cl. 337—6 **10 Claims**



A female-type clip or holder removably engages a terminal of an electrical device having an ejectable pin means. The terminal is engaged by the spaced arms of the holder, with one of these arms being relatively stiff and the other being relatively flexible. Biasing means acting on the flexible arm provides pressure between the holder and the terminal held therein. A normally open switch is mounted to the relatively stiff arm so as to be adjustable for differently sized electrical devices.

3,829,808

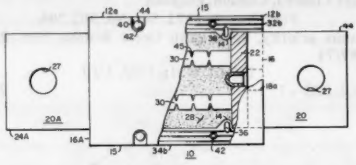
FUSE HOUSING CONSTRUCTION UTILIZING EXTRUDED TERMINALS AND PROCESS FOR MAKING SAME

Donald D. Blewitt, Pittsburgh; Frank L. Cameron, Irwin, and Charles H. Vondracek, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 14, 1973, Ser. No. 332,460

Int. Cl. H01h *85/02*

U.S. Cl. 337—186 **10 Claims**



An electrical fuse structure having electrically conducting T-shaped terminals. Two T-shaped terminals are disposed in spaced portions of an electrically insulating box-shaped fuse housing subsection so that part of the top or cross bar portion of the T-shaped terminal is positioned between an internal set of ribs and an inner portion of a housing subsection end wall. A similar fuse housing subsection is disposed over the remaining part of the top portion of the T-shaped member to enclose it. The housing subsections are secured in a complementary arrangement by bolts or rivets disposed in appropriate holes in the two subsections. The two subsections are thus joined to form a completely enclosed box in which the cross bar portions of the terminals are securely enclosed within the box at either end thereof, and with only the vertical or stem portions of the T-shaped terminals extending outwardly through openings in the ends of the box. Sand or other pulverulent arc quenching material is introduced into the inner chamber of the fuse housing through a hole drilled in the cross bar portion of one terminal which communicates with the inner chamber of the box and with the outside of the fuse housing through a suitable aligned opening in the fuse housing. After sand has been introduced into the fuse housing, the hole is sealed with a suitable plug. Fuse elements extend between the enclosed bar portions of the terminals within the enclosed chamber of the fuse housing. Ther fuse elements are surrounded by the pulverluent sand or crystalline material.

3,829,809

THERMAL LIMITER CONSTRUCTION AND ELECTRICAL SWITCH AND SYSTEM UTILIZING THE SAME

Emil Robert Plasko, Dayton, Ohio, assignor to Micro Devices Corp., Dayton, Ohio

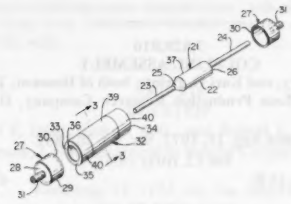
Filed Mar. 26, 1973, Ser. No. 344,745

Int. Cl. H01h *61/02, 63/13*

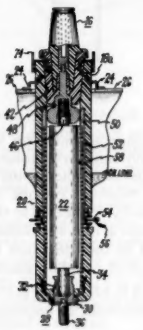
U.S. Cl. 337—107 **20 Claims**

A thermal limiter construction having a thermally responsive device provided with a body portion and a pair of leads extending from the body portion for interconnecting the device in an electrical circuit to be controlled thereby, the device opening the electrical connection between the leads thereof when the device is sensing a certain temperature condition. A sleeve is telescoped over the body portion of the device with the sleeve having an inner insulative peripheral surface disposed adjacent the device and an outer electrical heater thereon which when energized will provide the certain temperature condition to be sensed by the device to open the electrical connection between the leads. Such thermal limiter construction can be utilized with a switch housing so that the

electrical heater will only be operated when the switch thereof is in a closed position, such switch forming part of an electrical interlock control system for the oven door of a microwave oven or the like.



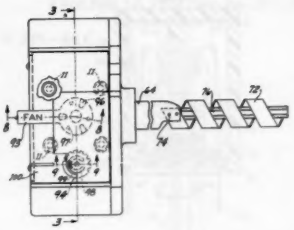
3,829,810
BUSHING, FUSE AND FUSEHOLDER
Bertrand V. Giegerich, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.
Filed Dec. 22, 1971, Ser. No. 211,017
Int. Cl. H01h *85/02*
U.S. Cl. 337—202 **11 Claims**



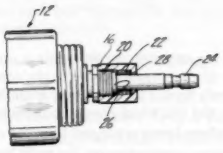
A bushing, fuse and fuseholder especially useful in electrical apparatus such as distribution transformers for underground power distribution systems. The electrical apparatus is provided with a bushing, a fuse and a fuseholder, the fuseholder being secured to the wall of the apparatus and extending into the interior thereof. The bushing has the fuse secured thereto and is inserted into the fuseholder. The bottom of the fuse makes electrical contact with a lower contact in the fuseholder. The upper portion of the fuse makes contact with the bushing to provide electrical continuity through the bushing and the fuse to the bottom contact in the fuseholder. The bushing may be in the form of an adapter to receive a standard bushing insert or it may include the insert. A standard elbow termination or similar member may be attached to the bushing to energize the electrical apparatus through the fuse and fuseholder. In another embodiment, the fuseholder has a second contact to allow use with loop feed distribution.

3,829,811
FAN AND HIGH TEMPERATURE LIMIT CONTROL FOR WARM AIR FURNACES
David E. Miller, Waterloo, Ill., assignor to Emerson Electric Co., St. Louis, Mo.
Filed July 19, 1973, Ser. No. 380,552
Int. Cl. H01h *37/52*
U.S. Cl. 337—353 **14 Claims**

The control device has a helical bimetal element, a fan switch, a high temperature limit switch, and a single rotary cam operatively connecting the bimetal element and switches. Low friction bearing means for journalling the cam, convenient means for calibrating, and novel fan switch adjustment means to vary the automatic operation or to effect continuous operation of the fan are other salient features of the device.



3,829,812
CURRENT INTERRUPTER FOR ELECTRIC CIGAR LIGHTER
Shigeru Inaba, Kanagawa, Japan, assignor to Niles Parts Co., Ltd., Tokyo, Japan
Filed July 16, 1973, Ser. No. 379,734
Int. Cl. H01h *37/46*
U.S. Cl. 337—382 **1 Claim**

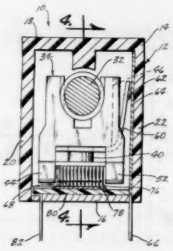


The current interrupter according to this invention has for its object to prevent overheating of electric cigar lighters. Said interrupter includes a tube which is made of thermoplastic resin of low inflammability. Within said tube, the terminal of the cigar lighter and an auxiliary terminal are placed coaxially and in contact with each other by means of a spring. When the cigar lighter has reached above the predetermined temperature, said thermoplastic tube softens and deforms axially by the action of the spring whereby as the contact between said terminals breaks, the current supply to the cigar lighter will be suspended at once.

3,829,813
POTENTIOMETER
Robert F. Klug, and Larry B. Lindquist, both of Columbus, Nebr., assignors to Dale Electronics Inc., Columbus, Nebr.
Filed Apr. 26, 1973, Ser. No. 354,482
Int. Cl. H01c *9/02*
U.S. Cl. 338—180 **11 Claims**

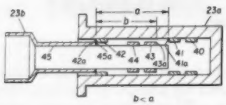
A potentiometer comprising a housing having an elongated leadscrew rotatably mounted therein. A wiper block is mounted on the leadscrew and adapted for longitudinal movement thereon when the leadscrew is rotated. A resistance element is mounted in the housing adjacent the leadscrew. A collector bar is also positioned in the housing and is spaced from and extending above the resistance element, and is disposed in

a plane parallel to the leadscrew. A wiper means is secured to the block means and has a plurality of juxtapositioned fingers



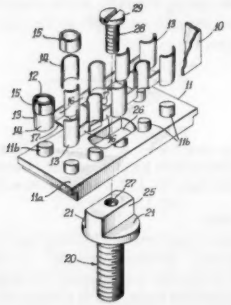
adapted to engage the resistance element. A collector arm is connected to the wiper means and slidably engages the collector bar.

3,829,814
LOGGING CABLE CONNECTOR
Andrew J. D. Straus, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 22, 1972, Ser. No. 317,846
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **4 Claims**



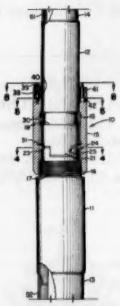
In a borehole logging tool, a connector is utilized to couple electrical power from a logging cable to the sensitive elements within the borehole tool. The connector includes a male and a female member, the electrical ground conductors on the male and female members being arranged to make contact prior to the electrical power conductors on the male and female members making contact.

3,829,815
COMMON GROUND STUD MODULE
John L. Rutkowski, Mt. Prospect, Ill., assignor to Appleton Electric Company, Chicago, Ill.
Filed July 2, 1973, Ser. No. 375,960
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **6 Claims**



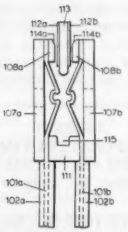
A wiring module has a plurality of sockets within an insulating case. A grounding stud suitable for mounting the module on a metal support has an end which extends through the case, a flange that abuts the outside of the case and a screw which clamps some of the socket structure against the inside of the case.

3,829,816
COUPLING ASSEMBLY
Adelbert Barry, and Karl O. Heintz, both of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.
Filed Aug. 21, 1972, Ser. No. 282,892
Int. Cl. H01r *3/04*
U.S. Cl. 339—16 R **4 Claims**



An improved coupling assembly for joining a pair of pipe sections includes a pin member connected to one of the pipe sections, a box member connected to the other of the pipe sections, and a collar mounted on one of the members and adapted to be threadedly connected to the other member. The assembly also includes a one-way clutch which permits the collar to be rotated in one direction but not the opposite direction. The improved coupling assembly includes a plug-type connector which is adapted to provide an electric circuit across the joint of the connected members.

3,829,817
ELECTRICAL CONNECTION DEVICES
Alan Robert Beavitt, Towcester, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland
Filed Sept. 22, 1972, Ser. No. 291,520
Claims priority, application Great Britain, Oct. 7, 1971, 46621/71; Jan. 8, 1972, 05690/72
Int. Cl. H01r *13/54;* **H05k** *1/07*
U.S. Cl. 339—17 F **8 Claims**



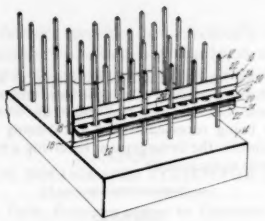
A variety of connection devices, and methods for their manufacture, having contact members which make contact

with conductive pads of printed circuit boards, the pads being pitched at 0.25mm or thereabouts. Each contact member comprises a resilient strip of conductive material which, in order to accommodate pad irregularities, is shaped to present two contact-making crests spaced from each other along the length of the strip, and joined to each other by an intervening loop of the strip.

3,829,818
BUS STRIP

Michael F. Iosue, Tempe, Ariz., and Robert E. Sanders, Old Saybrook, Conn., assignors to Rogers Corporation, Rogers, Conn.

Filed Aug. 22, 1973, Ser. No. 390,439
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 **10 Claims**

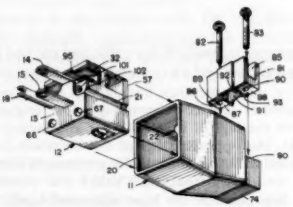


A bus strip which can be mounted on an array of terminal posts merely by pushing the bus strip into mounting engagement with a desired plurality of terminal posts is disclosed. The bus strip is a one piece configuration having a central spine with a pair of wings radiating in opposite directions from one end of the spine. The spine is provided with a series of holes adjacent the junction of the spine and wings to mount the bus strip on an array of terminal posts, and the wings are contoured so as to spring load the strip against the terminal posts with three points of contact. The bus strip may also be provided with gaps in the wings and spine whereby contact with posts may be skipped as desired.

3,829,819
FUSED ELECTRICAL PLUG

George R. Eckart, Lake Zurich, Ill., assignor to Daniel Woodhead Inc., Northbrook, Ill.

Filed Oct. 30, 1972, Ser. No. 302,230
Int. Cl. H01r *13/58, 13/68*
U.S. Cl. 339—44 R **8 Claims**

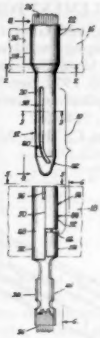


A dead front, back-wired electrical plug having a front accessible fuse mounted in a fuse well in the front face, a pivotable safety cover on the front face swingable into covering and uncovering relationship with the well, and a hollow plug housing with back-wired terminal posts for the respective contact blades and ground pin which project from the front face.

3,829,820
PLUG AND SOCKET CONNECTOR

Oswald Hubner, Neuenstadt, and Horst Wilhelm Benker, Heilbronn, both of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed July 13, 1972, Ser. No. 271,502
Int. Cl. H01r *13/54*
U.S. Cl. 339—88 C **4 Claims**

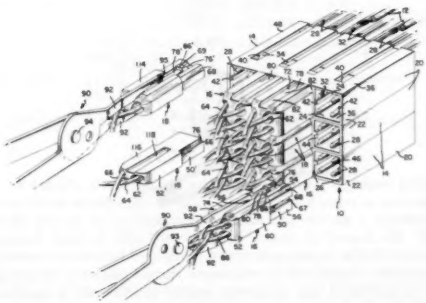


A stamped pin and socket connector; the pin and socket are both generally tubular, but split longitudinally at one side; the pin has an external groove, generally longitudinal but with a curved portion at the leading end; the socket has slightly overlapping edges at the split, one of which has a a nose that enters the groove in the pin, and the curve in the groove forces the socket to "wind up" and tighten on the pin and make firm contact engagement therewith.

3,829,821
LATCHING SYSTEM FOR AN ELECTRICAL CONNECTOR ASSEMBLY AND A TOOL FOR ACTUATING SAID SYSTEM

Paul B. Derr, Middletown; Gilbert Douglas Ferdon, Hummelstown, and Robert George Harwood, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburgh, Pa.

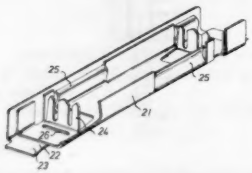
Filed Sept. 29, 1972, Ser. No. 293,640
Int. Cl. H01r *13/64*
U.S. Cl. 339—91 R **11 Claims**



A changeable interconnecting means comprising a plurality of receptacles arranged in a tightly packed stack with their sides against each other. The receptacles contain contact pins arranged in cells. The pins are connected to external conductors by wires extending from the rearward ends of the pins. In-

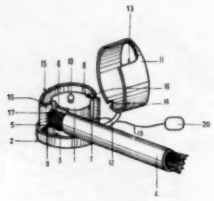
terconnections are made by plug members containing sockets which are dimensioned to fit snugly into the cells. The plug members are individually removable by virtue of latching means recessed in their sides which engage complementary latching means in the receptacles.

3,829,822
CONNECTING ELEMENT FOR CONDUCTORS
Hans Geiser, Westheim, and Gunter Tessendorf, Backnang, both of Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany
Filed Oct. 20, 1972, Ser. No. 299,321
Claims priority, application Germany, Oct. 23, 1971, 2152954; Oct. 23, 1971, 7140267
Int. Cl. H01r *9/08*
U.S. Cl. 339—98 **5 Claims**



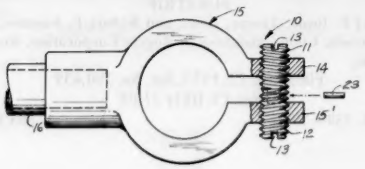
A connector for connecting conductors without soldering includes a blade portion and a contact portion. The blade portion has a blade which will sever the ends of the wires when the connector is assembled. A comb is positioned within the contact portion for receiving the wires and cutting through their insulation. The two portions are constructed so that they can be pressed together to form a completed connector.

3,829,823
COLLAR FOR AUTOMOBILE VEHICLE BATTERY
Gerard Paul Louis Dumesnil, 17 Rue Saint Marc, Epinay, France
Filed May 22, 1972, Ser. No. 255,589
Int. Cl. H01r *11/22*
U.S. Cl. 339—228 **8 Claims**



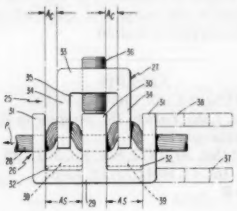
Collar for battery of automobile vehicles comprising an insulating hood in the form of a hollow boss surrounded at its base by an annular flange with a raised edge, the boss being fitted onto the terminal of the battery and comprising a hole revealing a portion of the terminal on which is applied the bared end of a cable by means of an elastic member partially surrounding the boss, and a cap insulating the assembly.

3,829,824
CLAMP BOLT FOR AN AUTOMOTIVE VEHICLE BATTERY
Edward L. Pillischafske, P.O. Box 965, Henderson, Nev. 89015
Filed May 18, 1973, Ser. No. 361,637
Int. Cl. H01r *11/26*
U.S. Cl. 339—230 C **3 Claims**



A bolt device for securing a cable clamp to a battery, the device consisting primarily of a right hand threaded member and a left hand threaded member, one of the members having a shank for being received within an opening of the other threaded member, the arrangement receiving a transverse pin for securement to each other.

3,829,825
TENSION CONNECTOR ASSEMBLY FOR CABLE AND THE LIKE
Ronald G. Hawkins, Jefferson, Tex., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Feb. 8, 1971, Ser. No. 113,428
Int. Cl. H01r *13/12*; **F16g** *11/06*
U.S. Cl. 339—242 **28 Claims**

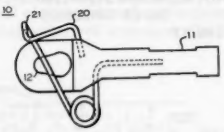


Tension connector assembly for cable and the like including a base spring member and a keeper spring member in opposed facing relation, each member having legs extending toward the other member and corresponding cable engaging seats defined across the legs of such member and facing the same such member, the opposing legs of the members being correspondingly offset to permit relative movement of the members toward and away from each other and corresponding overlapping alignment of the base seats and keeper seats in opposed facing relation for cooperative opposed seating engagement of the corresponding seats with a portion of a cable insertable thereacross to interconnect thereby the legs of base member with the legs of the keeper member, and adjustable tension exerting means interposed operatively between the members to urge them away from each other and in turn the opposed seats under tension against the correspondingly opposed portions of the girth of the cable adjacent thereto.

3,829,826
CABLE FASTENER FOR ELECTROCARDIOGRAPH ELECTRODES

Donald M. Brown, Bedford, and Roger E. Dennison, Waltham, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 22, 1972, Ser. No. 282,742
Int. Cl. H01r *11/22*
U.S. Cl. 339—255 R **3 Claims**

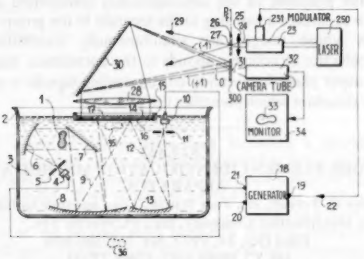


A cable fastener provides an electrically conducting mechanical connection between a standard male snap fastener commonly used as an electrocardiograph electrode and a cable. The male snap fastener is positively held in contact with the cable fastener by a spring.

3,829,827
ACOUSTICAL HOLOGRAPHY SYSTEM FOR ACOUSTIC IMAGE CONVERSION

Joel Ernvein, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 23, 1972, Ser. No. 256,019
Claims priority, application France, May 28, 1971, 71.19581; Aug. 27, 1971, 71.31183
Int. Cl. G01s *9/66;* **G01n** *29/04*
U.S. Cl. 340—5 H **9 Claims**



The present invention relates to acoustical holography systems and more particularly to the liquid surface relief method of acoustic image conversion.

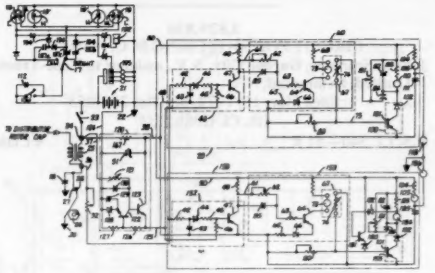
The system in accordance with the invention comprises means for optically reconstructing the acoustic hologram formed at the surface of a fluid; the operation of the reconstructing means is limited to the phases of insonification of the fluid surface.

3,829,828
SPEED RESPONSIVE TIMING CIRCUIT FOR VEHICLE LIGHT OPERATION

Don W. Hutchinson; Richard A. Kniesly, and Richard O. Stants, all of Kokomo, Ind., assignors to Ko An, Inc., Anderson, Ind.

Continuation-in-part of Ser. No. 148,075, May 28, 1971, abandoned. This application Nov. 21, 1972, Ser. No. 308,474
Int. Cl. B60q *1/54*
U.S. Cl. 340—62 **16 Claims**

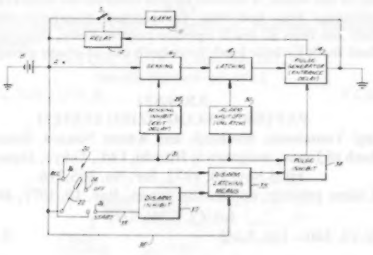
An electrical circuit controls vehicle lights proportionally to the vehicle speed with a time holding capability. One circuit connects the vehicle lights to a source of electrical energy upon attainment of a predetermined vehicle speed. Another circuit connects and disconnects in cyclical manner the vehicle lights to a source of electrical energy. In one embodiment, both circuits have a trigger subcircuit with a variable resistor responsive to cyclical operation of a light. A transistorized amplifier is connected to the output of a speed responsive signal generator and is also connected to the trigger subcircuit. A switch is connected to the variable resistor being activated as the resistance of the variable resistor decreases. An adjustable time delay subcircuit delays deactivation of the switch. In another embodiment, both circuits have light emitting diodes and photo-detectors for the trigger subcircuits.



3,829,829
AUTOMOBILE THEFT ALARM WITH IGNITION CONTROLLED AUTOMATIC ARMING MEANS

Rudor M. Teich, 6040 Blvd. E., West New York, N.J. 07093

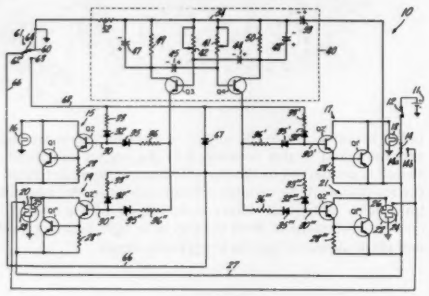
Division of Ser. No. 217,181, Jan. 12, 1972, Pat. No. 3,671,934, which is a continuation-in-part of Ser. No. 86,222, Nov. 2, 1970, Pat. No. 3,740,713. This application Dec. 4, 1972, Ser. No. 311,939
Int. Cl. B60r *25/10*
U.S. Cl. 340—64 **3 Claims**



A vehicle alarm system adapted to provide a pulsed actuation of an audible alarm upon unauthorized entry is provided with means to automatically rearm the circuit a predetermined interval after the ignition switch is turned off. The alarm is activated by a pulse generating circuit which is energized by a sensing circuit responsive to the rate of change of voltage at the vehicle battery terminals and is latched in its energized condition until the ignition switch is turned on. Means are provided to render the sensing circuit ineffective while the ignition switch is on and for a predetermined interval after it is turned off to allow the driver sufficient time to exit the vehicle. The pulse generating circuit is provided with an inherent initial time delay to provide the driver sufficient time to enter the vehicle and turn the ignition switch on.

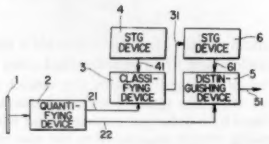
Means are provided for disarming the circuit when the ignition switch is turned to the accessory position and held in such position for a predetermined time interval, failing which the circuit will be automatically rearmed upon turning the ignition off. The practical effectiveness of the system is greatly enhanced by the requirement that the driver take positive action to disarm the alarm.

3,829,830
CIRCUIT FOR SWITCHING D. C. POWER
John J. Scarpino, Garden City, N.Y., assignor to Hope-Tronics, Limited, Hempstead, N.Y.
Filed Mar. 16, 1972, Ser. No. 235,053
Int. Cl. G08b *5/38*
U.S. Cl. 340—81 R **4 Claims**



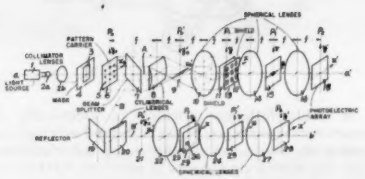
A circuit for delivering pulsed or constant power to a set of loads, particularly headlamps whose flashing serves as an alert. A number of transistor amplifiers serves as switches to switch moderately high power to the loads from a D.C. source. Two alternating, out-of-phase outputs of a continuously running astable multivibrator bias associated transistor switches into and out of conduction. This causes out of phase pulsed or flashing actuation of loads. An overriding, continuous bias potential, supplied to some, all, or none of the transistor switches, causes steady energization of some, all, or none of the loads. A remote switch controls the delivery of the continuous bias potential to selected transistor switches. When less than all loads operate continuously, the remaining pulsed loads include loads from both out-of-phase groups.

3,829,831
PATTERN RECOGNIZING SYSTEM
Shinji Yamamoto, Hachioji, and Kazuo Nakata, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 10, 1972, Ser. No. 305,316
Claims priority, application Japan, Nov. 10, 1971, 46-89021
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 AQ **5 Claims**



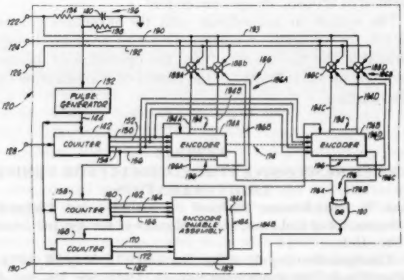
An unknown pattern is converted into first and second electrical signals respectively corresponding to 32 × 32 picture elements and 8 × 8 picture elements. The second electrical signal and signals of reference patterns for classification are compared, to select a probable category of reference patterns for discrimination. Reference patterns belonging to the probable category are taken out from among the discriminating reference patterns prepared beforehand. Signals of the patterns taken out and the first electrical signal are compared, to carry out the discrimination of the unknown pattern.

3,829,832
SYSTEM FOR RECOGNIZING PATTERNS
Harumi Kawasaki, Tokyo, Japan, assignor to Asaki Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Jan. 24, 1973, Ser. No. 326,259
Claims priority, application Japan, Jan. 27, 1972, 47-10006
Int. Cl. G06k *9/08*
U.S. Cl. 340—146.3 P **8 Claims**



A system for recognizing patterns arranged in rows and columns with the rows forming elements of a given input group and the columns forming elements of a given input group so that there are a pair of input groups. Images of all of the elements of one of these input groups are simultaneously transmitted to a matched filter while the elements of the other input groups are sequentially transmitted to the matched filter. The matched filter produces in an output plane a plurality of sets of correlation pattern images corresponding to the number of elements of the group which has the images of its elements simultaneously transmitted, with the arrangement of the memorized patterns at the matched filter being such that the positions of the simultaneously transmitted images can be separated according to the location in the group of elements whose images are simultaneously transmitted. A photoelectric structure responds to the correlation images in the output plane for sending corresponding signals to a computer structure which identifies the patterns.

3,829,833
CODE ELEMENT IDENTIFICATION METHOD AND APPARATUS
Charles C. Freeny, Jr., Fort Worth, Tex., assignor to Information Identification Company, Inc., Ft. Worth, Tex.
Filed Oct. 24, 1972, Ser. No. 300,098
Int. Cl. H04q *3/02*; **G06k** *17/00*
U.S. Cl. 340—149 R **22 Claims**



An improved code element identification method and apparatus wherein a code element assembly receives an interrogate signal from a code identifier assembly in an activated

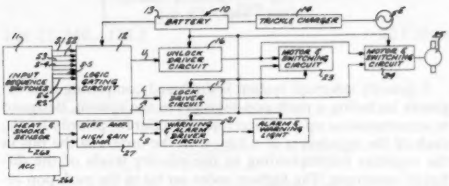
position of the code identifier assembly when the code element assembly is positioned in a code identifying proximity with the code identifier assembly, the code element assembly emitting a time oriented encoded responder signal in response to the received interrogate signal. The code identifier assembly receives and decodes the responder signal and generates a code valid signal in response to an identified code encoded in the received responder signal and a foreign code signal in response to an unidentified code encoded in the received responder signal. In one aspect, the present invention also contemplates an improved binary encoder module receiving a clock signal of a predetermined frequency and emitting an output signal encoded with a predetermined code.

3,829,834

ELECTRICAL COMBINATION LOCK APPARATUS

John T. Frankland, 8350 Decca, Long Beach, Calif. 90808, and Richard J. McLaughlin, 4203 W. 141 St., Hawthorne, Calif. 90250

Filed Sept. 10, 1973, Ser. No. 395,973
Int. Cl. H04q 9/00
U.S. Cl. 340—149 R **10 Claims**



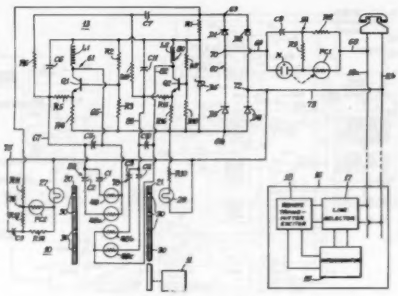
An electrical combination lock including a plurality of switches, connected in parallel to ground across a capacitor, for respectively producing when depressed a ground signal to corresponding first terminals of NAND gate latches. The NAND gate latches are connected in cascade to a reset signal switch at the second input terminals thereof whereby each NAND gate is switched to one state upon the depression of the reset switch and then to the other state upon depression of the corresponding combination switches. The same cascade connection of the latches will latch the latches in their switched states if the switch depression sequence follows the connection sequence and any other switch sequence will only register a change in state of one of the latch outputs concurrent with the depression of the switch while the second output will remain in its original state. Thus any switching sequence can be obtained, which, if followed, will latch all of the latches in the second state. This change in state of all of the latches is collected at a combination NAND gate, which, when receiving all signals of a particular state, activates a lock drive motor in a direction determined by the position thereof, either to open or close a lock. All other permutations of latch state, except one, are collected at other NAND gates to activate an alarm. The remaining permutation is reserved to reset the lock if a wrong sequence is depressed by error. The respective switches are connected to ground across an R-C circuit such that the depression thereof must occur within a predetermined interval. Also the power for the circuits is supplied by a battery continuously charged by a battery charger such that the combination lock is independent of an external power supply.

3,829,835

MULTI-SIGNAL ENCODER AND TRANSPONDER

Victor E. Stewart, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, South Milwaukee, Wis.

Filed Sept. 20, 1972, Ser. No. 290,513
Int. Cl. H04q 9/00
U.S. Cl. 340—151 **10 Claims**



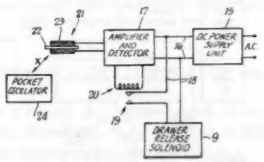
A position encoder and transponder for use in an automatic remote meter reading system and including disc means coupled to the meter being read and perforated in accordance with a position code and position means having a plurality of photoresponsive information bit means operatively associated with the coded disc. An oscillator provides two different tone signals in accordance with associated capacitive parameters and capacitance means is associated with each photoresponsive means for being placed in a parallel circuit relation with the capacitive parameters in accordance with the position of the coded disc so that a different pair of tone signals will be provided for each disc position.

3,829,836

LOCKING SYSTEM RESPONSIVE TO AN ELECTRONIC KEY

Walter Wilson Hugh Clarke, Marsh Ln., Eversley, Hampshire, England

Filed Oct. 13, 1972, Ser. No. 297,303
Int. Cl. H04q 9/10, 9/12
U.S. Cl. 340—171 R **9 Claims**



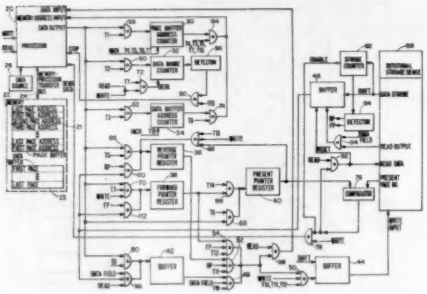
A locking system comprises locking means locking, for example, a drawer, an inductive pick-up and means for responding to an output from the pick-up to release the locking means, and a key device having an inductive field generator which can produce an output in the pick-up by induction at close range. The sensing system can be tuned to respond only to a key device generating one or more particular frequencies and a lockout arrangement can be provided to prevent release if any other frequency is present.

3,829,837

CONTROLLER FOR ROTATIONAL STORAGE DEVICE HAVING LINKED INFORMATION ORGANIZATION

William W. Farr, Jr., Holliston, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed June 24, 1971, Ser. No. 156,259
Int. Cl. G06f 7/22
U.S. Cl. 340—172.5 36 Claims



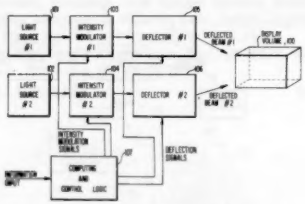
A rotational storage device such as a drum or disk includes a plurality of circumferential tracks on the surface thereof. Each track includes a plurality of segments or pages, and each page includes data, a reverse pointer and a forward pointer stored therein. A record is comprised of one or more pages which are linked together by the forward and reverse pointers. The first page of the record links to the last and second pages and so on until the last page of the record links to the next to last and first page of the record. Controller apparatus is shown for reading, writing and editing using the reverse and forward pointers.

3,829,838

COMPUTER-CONTROLLED THREE-DIMENSIONAL PATTERN GENERATOR

Jordan D. Lewis, Worthington; Carl M. Verber, and Robert B. McGhee, both of Columbus, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 87,214, Nov. 5, 1970, which is a continuation-in-part of Ser. No. 880,882, Nov. 28, 1969, abandoned. This application July 30, 1971, Ser. No. 167,765
Int. Cl. G06f 1/00, 9/00; G02b 1/00
U.S. Cl. 340—172.5 179 Claims



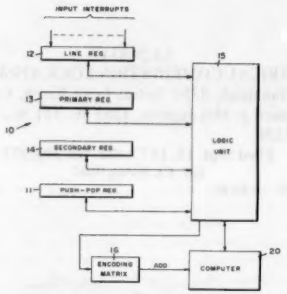
Computing and control logic generates control signals in response to input data specifying the coordinate positions of a plurality of points of a three-dimensional pattern. The control signals control the generation and cooperation of changes in energy levels within a medium which is capable of undergoing a change in optical properties in response to energy level changes within the medium, thereby producing within the medium an optical pattern representing the three-dimensional display of the three-dimensional pattern. In the preferred embodiment, the medium is a display volume of material in which a luminous display of the three-dimensional pattern is created by selective two-step excitation of emission centers in the volume. Other media, including a halographic recording medium, are also disclosed.

3,829,839

PRIORITY INTERRUPT SYSTEM

Harvey L. Jeane, Tujunga, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed July 24, 1972, Ser. No. 274,348
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 10 Claims



A priority interrupt system is disclosed comprising four registers including a push pop register. In the system, designed to accommodate up to *n* interrupts of different priority levels, each of the registers is of *n* bits, with the orders of the bits in the registers corresponding to the priority levels of the different interrupts. The highest order set bit in the push pop register indicates the priority level of the interrupt for which a sub-routine is being executed. Any lower order set bit indicates the priority level of an interrupt for which a sub-routine has been previously started and thereafter interrupted to service a subsequently received interrupt of a higher priority level. The sub-routines are structured so that when a sub-routine is completed the highest order set bit in the push pop register is reset and the controlled computer automatically returns to complete the sub-routine associated with the next highest order set bit in the push pop register. The other registers are used to receive the various interrupts, to compare the highest priority level of any of them with the highest order set bit in the push pop register to determine whether or not the computer's operation should be interrupted.

3,829,840

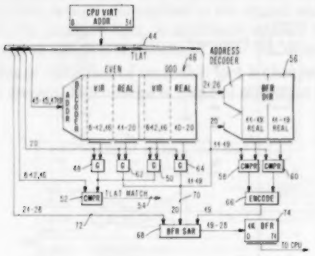
VIRTUAL MEMORY SYSTEM

John L. Burk; Spurgeon G. Hogan, Jr., both of Poughkeepsie; Russell H. Larson, Wappingers Falls, and Bruce L. McGilvray, Pleasant Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 24, 1972, Ser. No. 274,771
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 2 Claims

This specification describes a virtual memory system comprising a main storage and a smaller high speed buffer. Both main storage and the buffer are real-address oriented. Current virtual-to-real address translations are retained in a Translation Look Aside Table (TLAT) and real addresses of data stored in the buffer are maintained in a buffer directory. The CPU-provided virtual address causes access to the TLAT and

to the buffer directory. The virtual address stored in the word accessed from the TLAT is compared to the virtual address



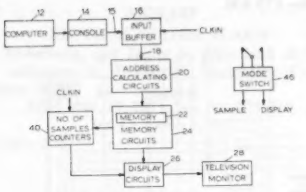
from the CPU and the real addresses accessed from the TLAT and the buffer directory are compared to each other. If both comparisons are equal, the data is accessed from the buffer.

3,829,841

COMPUTER MONITORING DEVICE

William Steinberg, Waterloo, Ontario, Canada, assignor to Computer Performance Instrumentation Incorporated, Kitchener, Ontario, Canada

Filed Dec. 8, 1972, Ser. No. 313,606
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **22 Claims**



A device for generating a histogram from a varying digital input word and for displaying the histogram as a series of vertical segments on a television monitor. The input word may be any word existing in a computer, e.g. it may be the program counter, thus to produce a histogram showing the frequency of occurrence of addresses of instructions used by the computer. The device includes a memory having a number of discrete memory addresses. One or more input words are assigned to each memory address, as preset by base address and resolution controls, and each time such word or words occur, the memory location at that address is incremented to produce a histogram.

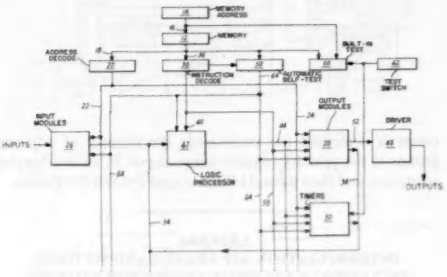
To display on a television monitor the histogram in memory, an X-axis position counter produces a series of counts during each horizontal scan of the monitor beam, to address successive memory locations during counting, so that each count corresponds to one memory location and also to a discrete X-axis position of the beam. A Y-axis position counter generates a count representing the Y-axis position of the beam. For each X-axis position, the content of the memory location associated therewith is read into a comparison circuit and compared with the Y-axis beam position. If the memory content of the addressed location is sufficiently great relative to the beam Y-axis position, the comparison circuit produces a pulse used to create a spot on the screen at the X and Y coordinates in question, so that as scanning progresses, the histogram segments are traced out on the screen.

3,829,842

AUTOMATIC SELF-TESTING PROGRAMMABLE INDUSTRIAL CONTROLLER

David H. Langdon, Enfield; James C. Prentice, Bolton, and David L. Van Olinda, Somers, all of Conn., assignors to Terry Controls Corporation, South Windsor, Conn.

Filed Feb. 22, 1973, Ser. No. 334,777
Int. Cl. G05b *11/00*; G06f *1/00, 11/00*
U.S. Cl. 340—172.5 **18 Claims**



A programmable industrial logic controller is provided for accomplishing the sequencing operations and other related control tasks performed by a logic control system of the type adapted for controlling machine and process equipment. The controller includes input means, memory means, control logic means, automatic self-test means, output means and manual test means. The input means functions to receive inputs supplied to the controller corresponding to the existing conditions of a plurality of parameters of the equipment being controlled. A pre-established set of instructions is stored in the memory means relating to the operation of the equipment being controlled. The control logic means functions to operate in response to a set of instructions stored in the memory means. Further, the control logic means functions to generate outputs, for controlling the operation of the equipment, from the series of instructions extracted from the memory means. Automatic self-test means are provided for periodically performing a self test of the controller to determine whether the controller is functioning properly. The output means is connected in circuit relation with control logic means and receives therefrom the outputs generated thereby. The outputs received by the output means are supplied thereby to the equipment being controlled. The manual test means are provided to permit manual test of selected controller functions.

3,829,843

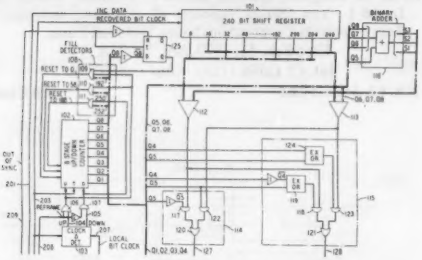
READOUT CIRCUITRY FOR ELASTIC DATA BIT STORES

Michael Peter Cichetti, Jr., Staten Island, N.Y., and Robert Jeffrey Fretz, Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 4, 1973, Ser. No. 347,855
Int. Cl. G06f *5/06*; G11c *19/00*
U.S. Cl. 340—172.5 **13 Claims**

Shift register stages delay incoming frames of data to align each frame with framing pulses of a local clock and to compensate for jitter of the incoming data stream. Variable delay is provided by a counter whose count is increased or decreased in accordance with whether the incoming bit rate is greater than or less than the local clock rate and by decoding and reading gates which decode the count to select the register output stage. The register is arranged into groups of stages, one reading gate for each group to provide coarse adjustment of the delay. The read out data is applied to a second

and a third shift register, one reading gate for each stage of these registers to provide fine adjustment of the delay. As the



count is increased (or decreased) the outputs of adjacent groups in the primary register are read out, in an overlapping sequence, and then passed to the second and third registers.

3,829,844

INTERROGATION APPARATUS AND METHOD INCLUDING A RECORD CARRIER FOR STORING IMAGES WITH ADDRESSES

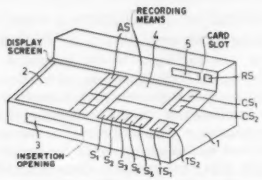
Frans Wessel Zonneveld, and Johannes Westhof, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 366,092

Claims priority, application Netherlands, June 10, 1972, 7207935

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **9 Claims**



A record carrier which is suitable for the storage of image information in the form of questions, and an interrogation apparatus in which the image information can be displayed in individual images. The record carrier comprises one an address location with an address for each image, so that the image is identified. The answers to questions are recorded on a recording medium in the interrogation apparatus, in combination with the address of the question image. This recording medium is used in a computer system, the combination of address and answer being a storage address of the computer store. The images of the record carrier can furthermore be provided with a type indication which indicates types of questions.

3,829,845

PROCESS CONTROL METHOD AND APPARATUS

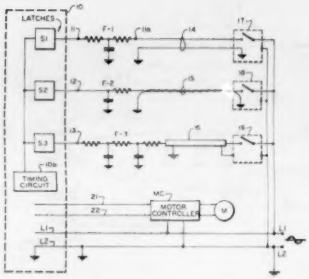
David K. Means, Ann Arbor, Mich., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Aug. 24, 1973, Ser. No. 391,349

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **14 Claims**

Noise immunity is enhanced in a digital computer controlled process by phase-shifting input signals before they are sampled by the computer to remove high frequency noise using small filters having short time constants, by sensing the phase-shifted signals when they are near their peak amplitudes, which is arranged to occur when line voltage is not at its peak amplitude, then processing the sensed signals and



transmitting command signals either the first or a subsequent time after such sensing that the line voltage passes through zero.

3,829,846

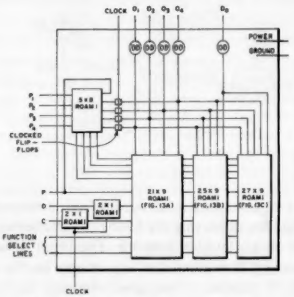
MULTI-FUNCTION LOGIC MODULE EMPLOYING READ-ONLY ASSOCIATIVE MEMORY ARRAYS

Robert Orval Berg, and Kenneth James Thurber, both of St. Paul, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 15, 1972, Ser. No. 306,689

Int. Cl. G11c *15/00, 17/00*

U.S. Cl. 340—173 AM **3 Claims**



A selectable-function, logic module, capable of being implemented on a single large-scale integrated (LSI) chip, in which all logical operations, including internal control functions, are performed by read-only associative memory (ROAM) arrays. Such modules, capable of both static combinational logic and sequential logic, may be employed as the basic building-blocks for large-scale processing systems or subsystems replacing the variety of discrete-function logic devices which would otherwise be employed.

3,829,847

OPTICAL MEMORY USING TRAPPED ELECTRONS IN A CRYSTAL OF PHOTOCONDUCTOR MATERIAL

James Vincent Masi, Monroe, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

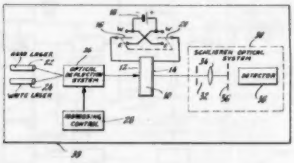
Filed Dec. 6, 1972, Ser. No. 312,661

Int. Cl. G11c *11/42*

U.S. Cl. 340—173 LT **23 Claims**

This invention provides an optical memory for data bits which memory consists of at least one crystal of a stable

photoconductor type material such as zinc oxide (ZnO) which material may have its index of refraction change in response to the concurrent application thereto of two energy elements, an electric field of suitable potential and light energy of a first suitable frequency. One of the elements, for example, the electric field, is normally applied to the crystal and the other element, for example light, is selectively applied to spots on the crystal at which it is desired to store bits of information. The index of refraction of each such spot is changed, storing a data bit thereat. This change in index of refraction is detected



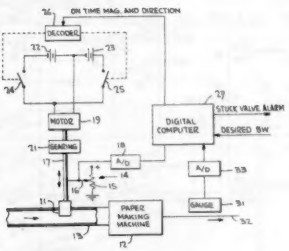
by, for example, applying a light beam of a different frequency to the crystal and utilizing either an imaging system, or a polarizer and an analyzer to detect the change in index of refraction. Erasure of data may be accomplished by reversing the electric field or by irradiating the crystal with heat or light energy at a longer wavelength than that utilized for read or write. Information may be stored at various depths within the crystal by varying the electric field across the crystal or by generating the field normal to the crystallographic C axis of the crystal and utilizing electrodes at different depths of the crystal to generate the field.

3,829,848

STUCK ACTUATOR ALARM

John E. Eickelberg, and James S. Rice, both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Mar. 29, 1971, Ser. No. 128,719
Int. Cl. G08b *21/00*
U.S. Cl. 340—238 **10 Claims**



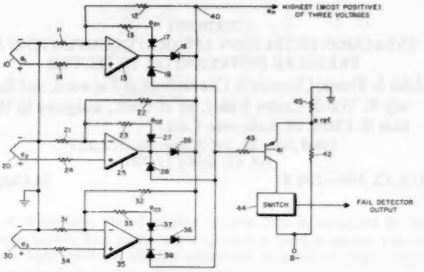
A system for and method of determining if an actuator, such as a motor driving a stem of a valve in a line feeding a fibrous slurry to a paper making machine, is in a stuck condition includes a position transducer for the actuator. A control signal for the actuator may be periodically supplied to the actuator. A computer responds to the magnitude of the control signal and an indication of the actual position of the actuator, as derived by an analog-to-digital converter responsive to a position transducer for the actuator. The computer compares the position of the actuator before and after the control signal is supplied to the actuator. In response to the two positions being the same, a signal indicative of the amount the actuator should have moved in response to the control signal is derived and compared with a predetermined value for the minimum amount of detectable movement for the actuator to derive a stuck actuator alarm signal selectively.

3,829,849

MEANS FOR PROVIDING THERMOCOUPLE FAILURE DETECTION IN A MULTIPLE PROBE SYSTEM

Reuben L. Stauffer, Hampton, Va., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 26, 1973, Ser. No. 345,160
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 E **5 Claims**



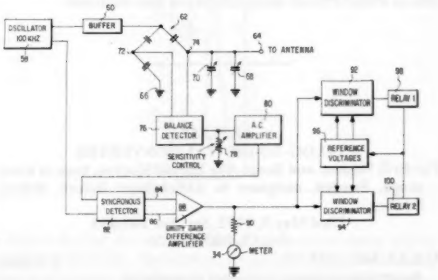
A select high multiple thermocouple probe circuit includes a plurality of operational amplifiers, each operational amplifier being associated respectively with an individual thermocouple. Each thermocouple is resistively coupled across the input terminals of its associated operational amplifier so that the operational amplifier generates an output signal which is proportional to the temperature at which the thermocouple is exposed. The output terminals of each operational amplifier is connected through an associated diode to a circuit output terminal so that only the highest operational amplifier output voltage appears at the circuit output terminal. The operational amplifier feedback circuits are arranged so that should a thermocouple become either open or shorted, the output voltage from that operational amplifier becomes abnormal. This abnormal voltage is sensed through a further diode network to indicate that a thermocouple failure has occurred.

3,829,850

PROXIMITY DETECTOR

John W. Guetersloh, Hamburg, N.Y., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Dec. 17, 1971, Ser. No. 209,333
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 C **22 Claims**



A capacitive proximity detector protects against injury, damage or unauthorized entry into a protected area. It com-

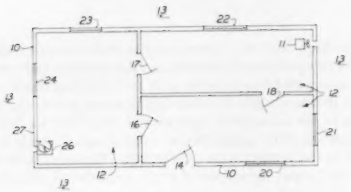
prises an unbalanced capacitive bridge including an antenna or sensor which produces an output proportional to the capacitance of the antenna to ground. A change in capacitance is detected and the resulting signal is applied to a pair of "windows" having maximum and minimum values which, if exceeded, operate a pair of relays and produce a suitable visual indication. Many fail-safe and other safety features are provided in the detector.

3,829,851

INTRUSION DETECTION APPARATUS EMPLOYING A PRESSURE-DIFFERENTIAL DETECTOR

John A. Evans; Clarence S. Chavis, both of Hayward, and Rodney R. Ward, Castro Valley, all of Calif., assignors to William H. Clark, III, Lafayette, Calif.

Filed June 21, 1973, Ser. No. 372,227
Int. Cl. G08b *13/20*
U.S. Cl. 340—258 R **14 Claims**



An intrusion detection apparatus employs a pressure differential generating means, such as a blower of fan, and a pressure differential sensor which senses changes in pressure from a steady state condition which occur upon the opening of doors or windows. A highly sensitive balanced and gravity biased vane is mounted in a chamber formed for communication between the volume enclosed by the structure and the exterior thereof to provide a sensor enabling an accurate, reproduceable sensing of small changes in openings to the exterior without being triggered by movement within the structure. A photoelectric vane detection means is employed to determine vane position without physically contacting the same. Means for adjusting the response sensitivity of the vane and an armed-before-alarm circuit are also disclosed.

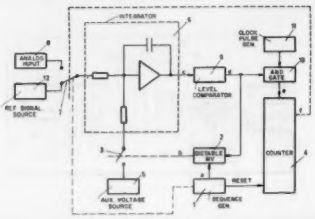
3,829,852

ANALOG-TO-DIGITAL CONVERTER

Per-Erik Nilsson, and Bengt-Ake Harald Sjogren, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed May 3, 1972, Ser. No. 249,805
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT **6 Claims**

An analog-to-digital converter comprising:
an integrating circuit producing an output signal;
a counter for producing a digital representation;
first means for controlling the counter and the integrating circuit to perform a conversion cycle wherein for a period of predetermined length, starting when the output signal reaches a predetermined level different from its level at the start of the conversion cycle, the integrating circuit integrates an analog signal and thereafter integrates a reference signal of opposite polarity to the analog signal, and the counter is controlled to produce a digital



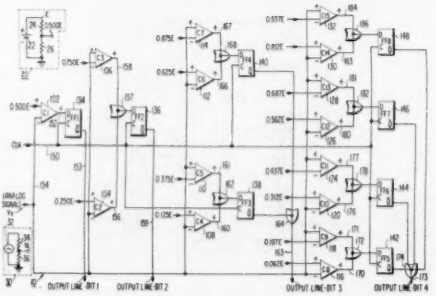
representation of the analog signal in terms of the reference signal; second means for controlling the integrating circuit to integrate an auxiliary signal of the same polarity as that of the analog signal for at least part of the time from the start of the conversion cycle until the output signal of the integrating circuit reaches the predetermined level.

3,829,853

HIGH-SPEED ANALOG-TO-DIGITAL CONVERTER

David Daniel Freedman, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,270
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **1 Claim**



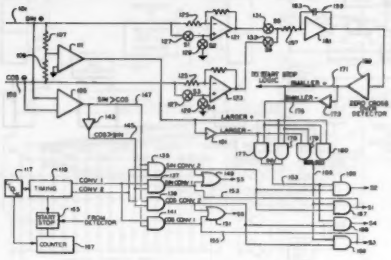
An analog input voltage is fed to each input of a plurality of comparators. The other input of each comparator is connected to a source of reference potential having a plurality of fixed reference voltage levels representing the digital quantization levels. The outputs of the comparators drive encoding logic including a plurality of clocked flip-flop stages. The complementary outputs of the flip-flop stages are connected to corresponding output lines to provide the binary digits of the equivalent digital word. The parallel-binary output signal is, at any instant, a true representation of the analog input voltage, that was present at the output of the comparators preceding each clock pulse.

3,829,854

OCTANT DETERMINATION SYSTEM FOR AN ANALOG TO DIGITAL CONVERTER

Arnold J. Brand, Parsippany, N.J., and Sidney M. Sacks, Monsey, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed May 7, 1973, Ser. No. 358,172
Int. Cl. H03k 13/00
U.S. Cl. 340—347 AD 14 Claims



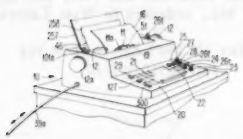
An improved system for making an octant determination in an analog to digital converter used to compute the tangent of an angle from sine and cosine inputs in which the output of the zero crossover detector of the converter is used to make the octant determination.

3,829,855

TYPING SYSTEM WITH FORM PROGRAMMED FORMAT CONTROL

Robert Adolph Kolpek, and James Thomas Loiselle, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1973, Ser. No. 371,820
Int. Cl. G06k 7/08
U.S. Cl. 340—172.5 22 Claims



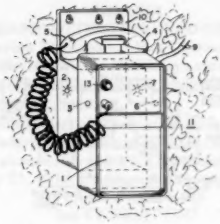
A forms format program is read from pre-printed markings on a typing form to assist the operator in moving accurately and quickly to different typing fields. Depression of the tabulation key can select tabulation to a form selected tab stop, vertical feed and automatic line return. A field return key generates new lines within a column defined by form selected tab stops. Marks on a typing form can both initiate and terminate repeat forward or reverse indexing to provide a search for a new vertically displaced typing field. Typing status functions such as single or double line spacing are automatically selected by markings on the form.

3,829,856

PAGING VISUAL SIGNAL

George J. Conroy, Bethel Park, and Howard E. Parkinson, Irwin, both of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 11, 1973, Ser. No. 405,603
Int. Cl. G08b 5/38
U.S. Cl. 340—366 R 5 Claims



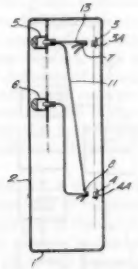
A telephone visual paging system that is actuated by an audio signal. The audio input current is used to power two or more light emitting diodes which are housed on a telephone receiver. Other than the audio signal power supply, no separate power supply system is needed to power these light sources. By superimposing variations caused by the audio input signal on the periodic switching signals from a multivibrator, the light emitting diodes can generate a semaphore radiation action to get the visual attention of an observer. This invention is particularly useful in hazardous gaseous environments, like coal mines, where electric wiring connections and the possibility of ignitions from electric sources should be minimized.

3,829,857

OPTICAL SIGNALLING

William Bell Allan, Leeds; Jeffrey Douglas Rattle, Basingstoke, and Arthur Gordon Atkinson, Addingham near Ilkley, all of England, assignors to The Rank Organisation Limited, London, England

Filed June 1, 1971, Ser. No. 148,852
Claims priority, application Great Britain, June 1, 1970, 26342/70
Int. Cl. H04l 23/00
U.S. Cl. 340—380 4 Claims



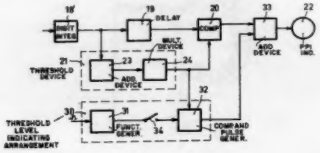
Visual display devices containing a matrix of areas which can be selectively illuminated to display a predetermined legend or symbol. In place of individual lamps used hitherto, the proposed visual display devices utilise bundles of optical fibres coupled to a reduced number of light sources, thus simplifying the assocated control circuitry.

3,829,858

ARRANGEMENT IN A RADAR EQUIPMENT FOR INDICATING A VARIABLE THRESHOLD LEVEL ON THE INDICATOR

Bengt Bergkvist, Jarfalla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 15, 1973, Ser. No. 332,733
Claims priority, application Sweden, Feb. 28, 1972, 2434/72
Int. Cl. G01s 9/02, 7/06
U.S. Cl. 343—7 A 1 Claim



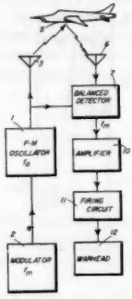
A radar equipment comprising a receiver in which incoming echo pulses are compared with a threshold level, which is variable and in each interval adjusted to a value based upon a measurement of the noise or disturbance energy, only such echo pulses being passed to an indicator which have an amplitude exceeding the threshold level. According to the invention the value of the threshold level, set in each moment, is indicated on the indicator, whereby the uncertainty as regards the sensitivity of the radar equipment caused by the variable threshold level is eliminated.

3,829,859

LOW-NOISE FUZE

Henry P. Kalmus, 3255 O St., N.W., Washington, D.C. 20007; Harold Goldberg, 5910-32nd St., N.W., Washington, D.C. 20015, and Milton Sanders, 1445 Ferndale Ave., Chicago, Ill.

Filed Oct. 6, 1954, Ser. No. 460,789
Int. Cl. F42c 13/04; G01s 9/24
U.S. Cl. 343—7 PF 3 Claims



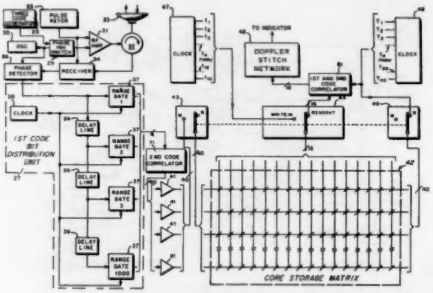
This invention relates to the radio-proximity type of ordnance fuze in which the presence of a target is detected by the reflection of a radio signal transmitted from the fuze.

3,829,860

SIGNAL CORRELATOR

Thomas P. Cutler, Chestnut Hill, Mass., and Kenneth Dollinger, Nashua, N.H., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1971, Ser. No. 109,603
Int. Cl. G01s 9/44; G06f 15/34
U.S. Cl. 343—9 18 Claims



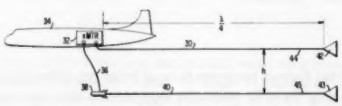
A signal encoded with three superimposed binary codes is divided into a predetermined number of parallel lines equal to the number of bits in the first code and passed to a second code correlator. Each parallel output of the second code correlator is sampled and stored in a corresponding row of a core storage matrix so that each row of the matrix contains a history of the polarity of the corresponding signal. The bits stored on each row represent the third code sequence while the overall polarity of one row relative to the next adjacent row is governed by the first code. One at a time each row of signals is vertically read out in parallel to a long shift register having multiple sections. Each section is masked for output in accordance with the third code. The entire mask on each section is either normal or inverted in accordance with the first code. The shift register output is connected to a summing network which adds the corresponding bits in each section to produce parallel analog outputs. The signal, now correlated for the first, second and third codes, may be further processed for any remaining information such as doppler frequency in the case of a received radar signal.

3,829,861

TRAILING WIRE ANTENNA

James J. Karaganis, Rockville, and Peter R. Payne, Silver Spring, both of Md., assignors to Wyle Laboratories, El Segundo, Calif.

Filed Oct. 10, 1967, Ser. No. 674,314
Int. Cl. H01q 1/30
U.S. Cl. 343—707 15 Claims



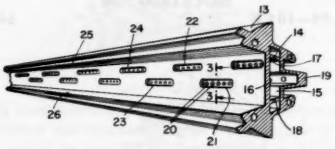
An improved trailing wire antenna system adapted to be trailed behind a flying aircraft and whose radiation is substantially completely vertically polarized rather than horizontally polarized. The antenna system consists essentially of two parallel antenna conductors which form a resonant transmission line, the horizontal radiation from which is substantially

suppressed so that most of the radiation is vertically polarized. The antenna system is particularly useful in the low and very low frequency ranges.

3,829,862
RIDGE SCAN ANTENNA

David W. Young, 627 N. Beechwood Dr., Burbank, Calif. 91506

Filed Apr. 20, 1973, Ser. No. 353,201
Int. Cl. H01q *3/36, 13/20*
U.S. Cl. 343—767 **24 Claims**



An elongated horizontally disposed waveguide has a series of holes in one longitudinal side wall dimensioned below cut-off so as to be non-resonant and insensitive to wave length variations. The dimensioning and spacing of the holes on the one longitudinal side wall provides for radiation of a fan shaped beam in a vertical plane having a fairly broad elevational angle and an extremely narrow azimuth angle. The fan shaped beam itself is caused to scan through a given angle in azimuth by means of a ridge member reciprocated wholly within a new waveguide structure T shaped in cross section. In addition to the unique waveguide shape and hole design for coupling energy from the waveguide, novel input and output transition structures are provided. The waveguide is typically used in the leading edge of an aircraft wing as a radar antenna.

3,829,863
POLARIZING FEED APPARATUS FOR BICONICAL ANTENNAS

Stephen E. Lipsky, East Hills, N.Y., assignor to General Instrument Corporation, Newark, N.J.

Filed Mar. 12, 1973, Ser. No. 340,322
Int. Cl. H01q *13/00, 19/00, 21/00*
U.S. Cl. 343—773 **12 Claims**

Apparatus is disclosed for feeding a single biconical antenna of the type having an upper and a lower cone which are connected to a coaxial feed line, the apices of said cones being in close proximity. The apparatus comprises means for vertically feeding said antenna, the vertical feed means being located at the apices of the cones. Means are also provided for horizontally feeding the antenna, the horizontal feed means being located in the vicinity of the apices of said cones. This combination of feed apparatuses permits the utilization of the vertical, horizontal, slant linear and circular polarization without the necessity of an external polarizer.

3,829,864
TRANSMITTING STACKED AERIAL

David Matveevich Truskanov, ulitsa Ostroumova, 10, kv. 35; Kirill Rudolfovich Brunin, Nalichnaya ulitsa, 33, kv. 13, and Lev Semenovich Ratner, prospekt Morisa Toresa, 30, kv. 37, all of Leningrad, U.S.S.R.

Continuation-in-part of Ser. No. 380,227, July 18, 1973, abandoned, which is a continuation of Ser. No. 264,407, June 15, 1972, abandoned, which is a continuation of Ser. No. 40,960, May 27, 1970, abandoned. This application Oct. 15, 1973, Ser. No. 406,615
Int. Cl. H01q *21/00*
U.S. Cl. 343—833 **8 Claims**

A transmitting stacked aerial comprising a current-conducting cylindrical support and tiers comprising current-energized radiators. In each tier, radiators are arranged equidistantly along at least some portion of the periphery of the cross-section of the support and are radially oriented relative to the surface thereof. Radiators in each tier are offset in azimuth relative to those of each next tier through a preset angle and are energized with currents of an equal phase, consecutively shifted by 90° from tier to tier. Radiators in each tier are offset in aximuth relative to those in each next tier through an angle of $\psi/4$ (ψ being an angle between adjacent radiators in the same tier). The angle ψ is less than an angle $\beta=[(2\lambda o/D) \cdot 57.3]°$, where D is a diameter of the support and λ is the mid-band wavelength. Radiators in each tier are consecutively offset in azimuth relative to those in the next tier through said angle of $\psi/4$. The radiators are energized with currents of an equal phase, consecutively shifted in one direction by 90° from tier to tier.

In another embodiment, a transmitting stacked aerial also comprises an additional tier of radiators arranged in the middle of the radiating portion of the aerial. This additional tier is designed to rule out troughs in the radiation pattern of the aerial in the vertical plane and is arranged symmetrically with respect to the first and last tiers. Additional radiators are arranged equidistantly along the periphery of the cross-section of the aerial support, with an angle Σ between adjacent additional radiators being less than an angle $\gamma=[(\lambda 0/2D \cdot 57.3]°$.

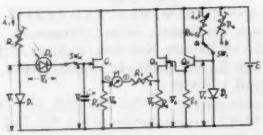
Additional radiators are energized with currents of an equal phase, shifted by an angle of 90°, through four radiators. All concerning the second embodiment only holds true with an even number of main tiers.

3,829,865

ELECTRIC EXPOSURE METER WITH OPERATIONAL FUNCTION

Shoji Kamasako, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-To, Japan

Filed Apr. 4, 1973, Ser. No. 347,693
Claims priority, application Japan, Apr. 14, 1972, 47-44152[U]
Int. Cl. G03j 1/42
U.S. Cl. 354—24 11 Claims



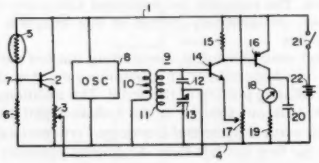
An electric exposure meter for receiving light from an object and for indicating camera aperture value, exposure time or object brightness. A differential amplifier has first and second inputs and an output. An output signal is formed across the output proportional to the difference between signals applied at each of the inputs. A first circuit includes a photo sensitive element for sensing object light and providing a corresponding object brightness signal to the first input. A memory circuit is coupled to the first input and to the object brightness signal for storing a corresponding signal and for applying the stored signal to the first input. A second circuit has a second output circuit and includes: a first manually adjustable resistor for causing an adjustable voltage to be applied by the second circuit at the second output circuit representative of the difference between film sensitivity and exposure time or between film sensitivity and aperture value; a second resistor for causing a constant prefixed voltage to be applied by the second circuit at the second output circuit; and a switch for switching the second output circuit between the first resistor and the second resistor. A meter is coupled across the differential amplifier output circuit. The second output circuit is coupled to the second input to thereby cause a signal across the differential amplifier output circuit and a direct meter indication indicative of aperture value on exposure time or object brightness.

3,829,866

DEVICE FOR DETECTING A PRECISE FOCUSING POINT AND AN AUTOMATIC FOCUS ADJUSTING DEVICE

Tsukumo Nobusawa, No. 255 Minami-Ohizumi, Nerima-ku, Tokyo, Japan, assignor to Asahi Optical Co., Ltd., Tokyo, Japan

Filed May 9, 1973, Ser. No. 358,525
Claims priority, application Japan, June 17, 1972, 47-60024
Int. Cl. G03b 3/00
U.S. Cl. 354—25 9 Claims



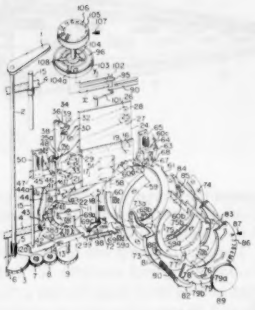
A device for detecting a precise focussing point, particularly for use in a camera, characterized in that the sharpness of focus of a photographic object, detected by a photoelectric element disposed on or in the vicinity of a predetermined focal plane (a focussing or film plane) on an optical axis of a lens or optical path thereof, is converted into a DC signal and a resonant circuit having a variable resonance frequency controlled by said DC signal produces an output indicative of precise focussing when the resonant circuit responds to the oscillation frequency of an oscillation circuit which is adapted to oscillate at a fixed frequency.

3,829,867

CAMERA EQUIPPED WITH AN AUTOMATIC EXPOSURE CONTROL SYSTEM

Shigeo Ono, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed June 29, 1971, Ser. No. 157,943
Claims priority, application Japan, July 3, 1970, 45/57742
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CE 24 Claims



A camera having a taking lens with an adjustable aperture, shutter means mounted for movement from an initial position to a terminal position, and constructed and arranged that the time period between initiation and termination of movement is determinative of the exposure time of said camera, and an automatic exposure system including photosensitive means responsive to the light which is passed through the taking lens for providing a first electric signal relating to the brightness of the light, memory means coupled to the photosensitive means for memorizing the value of the brightness of the light passed through the taking lens after adjustment of the aperture, selectively actuable control means for adjusting the size of said aperture in response to the first electric signal and a predetermined exposure time of the camera, selectively actuable exposure means for adjusting the exposure time of said shutter means in response to the value of light memorized by the memory means, and switch means for selectively actuating either said control means for adjusting the size of said aperture or said control means for adjusting the exposure time of said shutter means.

3,829,868

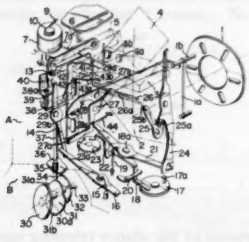
CAMERA HAVING A RETAINABLE EXPOSURE CONTROL DEVICE

Hiroshi Aizawa, 2130 Yamazaki-cho, Machida-shi, Tokyo; Akio Sunouchi, 872 Shimonoge, Kawasaki-shi, Kanagawa-ken, and Mitsutoshi Ogiso, 458-3 Shimokuchi Nitta-machi, Kawasaki-shi, Kanagawa-ken, all of Japan

Filed Mar. 26, 1973, Ser. No. 345,139
Claims priority, application Japan, Mar. 30, 1972, 47-31968
Int. Cl. G03b 7/12
U.S. Cl. 354—45 4 Claims

A TTL (Through the Taking Lens) photometry single lens reflex camera having a motor drive means mounted detachably or in a built-in manner. A camera having a retainable exposure control device which can repeatedly take a

photograph in such a manner that in the case the photographing period is short, a pointer of meter as an EE (Electric Eye) mechanism element is clamped in the photometry taken before photographing, and maintaining or retaining said



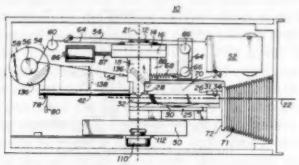
clamping condition to put the EE mechanism inoperative and which further can repeatedly take a photograph in such a manner that in the case the photographing period is long, the EE mechanism is operated following the pointer of meter.

3,829,869

PHOTO FINISH RECORD SYSTEM

Jack E. Balko, Grand Prairie; Davis F. Moffatt, Richardson, both of Tex., and Durward F. Searcy, Shreveport, La., assignors to Specialty Instruments Corp., Grand Prairie, Tex.

Filed Dec. 29, 1972, Ser. No. 319,193
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **9 Claims**



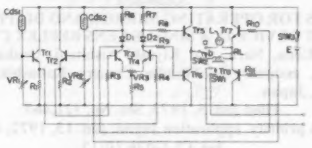
A photo finish record system produces a time sequence photograph of race contestants crossing a finish line in alignment with a numerical display of elapsed time: the recording unit of the system has a lens and narrow aperture focusing images of a narrow band including the finish line on a self-developing film carried at constant speed past the lens by a film carriage driven on a linear track by a constant force spring motor acting on the carriage through a cable which is wound on a pulley controlled by a constant speed governor. An electronic clock drives a light emitting diode display producing visible numerical indications of elapsed time, which are projected onto one edge of the film. An automatic control cycle is provided whereby the unit is activated only when signaled by a photoelectric sensor near the finish line. The interruption of a light beam by a contestant nearing the finish line causes the sensor to operate a switching circuit releasing a film advance latch, opening the camera shutter and turning on the lighted time display, all of which functions are deactivated a predetermined time after restoration of the beam to the photoelectric sensor, except that the cycle is retriggerable by another finishing contestant. An opening is provided on the carriage for through the lens alignment of the unit upon actuation of a manual alignment control which releases the film advance latch and stops the carriage with the opening aligned with the lens.

3,829,870

PHOTOGRAPHIC CAMERA

Masanobu Ogoro, Yokohama, and Kiyoshi Takashi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1973, Ser. No. 360,647
Claims priority, application Japan, May 22, 1972, 47-51091
Int. Cl. G03b *7/08*
U.S. Cl. 354—50 **8 Claims**



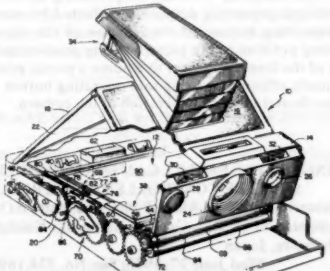
A photographic lens system provides an image of the photographic field of view at a focussing plane, such as a condenser lens. Two photoelectric devices are positioned closely adjacent the focussing plane to be responsive to the light of the image, with each device scanning a respective area of the image to provide a respective electrical output. The two photoelectric devices are connected in a bridge circuit including adjustable resistances for balancing the bridge circuit. A pair of transistors have their inputs connected to the output of the bridge circuit, and their outputs control a transistorized differential amplifier which, responsive to an unbalance of the bridge circuit, supplies a control signal to a switching network to energize a relay to close a control switch which energizes a shutter release of the camera to operate the shutter of the camera to take a picture. The picture is taken responsive to movement of an object in the photographic field of the lens system, or to entry of an object into the photographic field, either of these cases resulting in an unbalance of the bridge circuit. Instead of the pair of photoelectric devices, a plurality of photoelectric devices may be provided and can be connected into two sets, each included in a respective arm of the bridge circuit.

3,829,871

PHOTOGRAPHIC APPARATUS

Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 2, 1973, Ser. No. 375,500
Int. Cl. G03b *17/50*
U.S. Cl. 354—86 **3 Claims**



Photographic apparatus for use with a film unit of the self-developing type including a chamber for locating a film unit in position for exposure and a pair of rollers mounted adjacent a

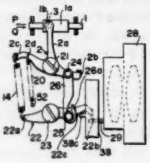
leading edge of a film unit located in the exposure position. The rollers are adapted to define a longitudinally extending gap which defines an acute angle with the leading edge of the film unit located in the exposure position. Structure is provided for canting the film unit as it is advanced from the exposure position, subsequent to exposure, toward the rollers such that the leading edge of the exposed film unit is parallel with the longitudinally extending gap as the film unit enters the gap.

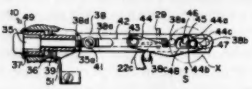
3,829,872

MEANS FOR OPERATING MIRROR AND DIAPHRAGM PRESET DEVICE IN A SINGLE LENS REFLEX CAMERA

Hiroshi Ueda, Nara, and Kiyoshi Nishitani, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1973, Ser. No. 321,467
Claims priority, application Japan, Jan. 13, 1972, 47-5542
Int. Cl. G03b *19/12*
U.S. Cl. 354—156 **5 Claims**





A manual operating device for the movable mirror and the diaphragm preset device in a single lens reflex camera, whereby, in connection with a shutter releasing operation of the camera, it is made possible to manually operate a mirror which is movable between a viewing position and a picture taking position, and also a lens diaphragm presetting device which is adapted to adjust a fully opened lens diaphragm to a preset position. Both the coupling of a reciprocating shaft, associated with the shutter releasing operation of the camera, to a mirror driving mechanism which is adapted to rotate the mirror from a viewing position to a picture taking position, and the coupling of said reciprocating shaft to the lens diaphragm presetting device, are effected by manipulation of an operating button; or the rotation of the mirror from the viewing position to the picture taking position and the operation of the lens diaphragm to assume a preset position may be manually effected by using said operating button, irrespective of the shutter releasing operation of the camera.

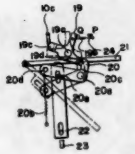
3,829,873

SINGLE LENS REFLEX CAMERA PROVIDED WITH A SHUTTER CONTROLLED ELECTRICALLY

Toshinori Imura, and Akira Yamanaka, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed June 27, 1973, Ser. No. 374,169
Claims priority, application Japan, July 1, 1972, 47-65441; Aug. 12, 1972, 47-94213
Int. Cl. G03b *17/44*
U.S. Cl. 354—156 **17 Claims**

A single lens reflex camera is provided with an electrically controlled shutter network including an electromagnet in which, when the electromagnet fails to operate due to the drop of the battery voltage below a predetermined value, the movable reflex mirror, which is movable between the viewing position and the picture taking position, is arrested and held in the picture taking position, after the releasing operation of the



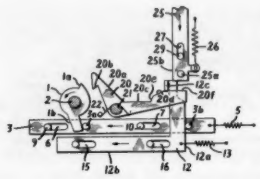
shutter, by means of the shutter releasing operation coupled with the movable member actuated by the electromagnet, providing an indication to the photographer of insufficient battery voltage, but enabling the film winding and shutter releasing operations for subsequent photographing.

3,829,874

INTERLOCK MECHANISM INTERLOCKING CAMERA SHUTTER WITH A DOUBLE-FRAME FILM ADVANCE PREVENTION APPARATUS

Yukio Morino, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1972, Ser. No. 296,091
Claims priority, application Japan, Oct. 11, 1971, 46-80030
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 R **2 Claims**



Apparatus preventing a double-frame advance of the film thereby precluding successive film frames from being wound without taking an exposure on each frame. A film-advance enabling lever is actuated from a rest position in which it releases the film advance or wind mechanism of the camera. The film-advance enabling lever is actuated by a shutter-cocking lever which is actuated by advancing the camera film one frame with the camera wind or advance lever which likewise charges or cocks the shutter. An interlock is actuated by the film-advance enabling lever locking the shutter in a charged state when the shutter-cocking lever, actuated upon advancement of the film, is restored to its rest position. The interlock locks the film-advance enabling lever in an operative position thereof and is itself released by the shutter-release lever when the shutter-release button is depressed. A shutter-release plate or lever temporarily retains the film-advance enabling lever from being completely restored to its rest position so that it precludes enabling of film advancing until it is completely restored to its rest position at which time it releases the film-advancing mechanism and releasably locks the shutter-release lever in position, so that an exposure cannot be taken until the next successive film-advance or take up has taken place.

3,829,875

PHOTOGRAPHIC CAMERA FOR USE WITH ROLL FILM

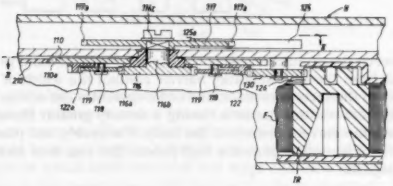
Alfred Winkler, Munich; Dieter Engelsmann, Unterhaching; Horst Karl, Munich, and Rolf Schroeder, Baldham, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 26, 1973, Ser. No. 418,854

Claims priority, application Germany, Nov. 24, 1972, 2257683

Int. Cl. G03b 17/42, 1/16

U.S. Cl. 354—206 10 Claims



A still camera for use with roll film having a row of perforations, one for each film frame, employs a planetary transmission whose planet carrier is rotatable by hand, whose internal gear rotates the takeup reel during transport of film, and whose sun gear can cock the shutter or perform another function while the internal gear is held against rotation. The sun gear is held against rotation by a lever during a first stage of rotation of the planet carrier while the internal gear rotates the takeup reel. A feeler scans the moving film and penetrates into an oncoming perforation to thereby disengage the lever from the sun gear so that the latter can rotate during a second stage of rotation of the planet carrier as soon as the internal gear is arrested due to resistance of the takeup reel to rotate in a direction to collect exposed film. The lever has a tooth which engages complementary teeth of the sun gear during the first stage of rotation of the planet carrier; such teeth constitute an overload clutch which allows the sun gear to rotate against the opposition of the lever in response to rotation of the planet carrier when the latter transmits a predetermined force while the internal gear is also held against rotation. This prevents a tearing of the film and/or damage to component parts of the camera.

3,829,876

FILM COUNT INDICATING MEANS FOR CAMERAS THAT CAN PERFORM MULTIPLE OVERLAPPING EXPOSURE

Naoyuki Uno, Kawagoe, and Fumio Urano, Wako, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-To, Japan

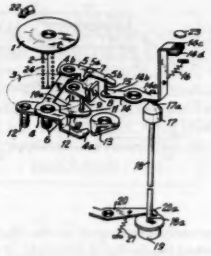
Filed May 8, 1973, Ser. No. 358,264

Claims priority, application Japan, May 16, 1972, 47-57140[U]

Int. Cl. G03b 17/42, 17/36

U.S. Cl. 354—209 9 Claims

A camera which can be manipulated to provide intentional multiple exposures. The camera has a film-advancing structure for advancing an unexposed film frame into an exposure position in response to cocking of a shutter of the camera. Also, the camera has a frame-counting structure for counting the number of exposed frames in response to cocking of the camera shutter. A manually operable structure is accessible to the operator of the camera to be manipulated for creating conditions suitable for carrying out an intentional multiple exposure. This manually operable structure is operatively connected on the one hand with the film-advancing structure and



on the other hand with the frame-counting structure to prevent actuation of both of the latter structures in response to cocking of the shutter.

3,829,877

CAMERA ELECTRIC SHUTTER WITH MECHANICAL DELAY DEVICE

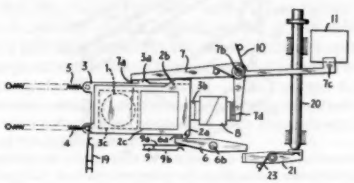
Kiyoshi Kitai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 97,512, Dec. 14, 1970, abandoned. This application Dec. 21, 1972, Ser. No. 317,709

Claims priority, application Japan, Dec. 16, 1969, 44-100815

Int. Cl. G03b 9/00

U.S. Cl. 354—246 2 Claims



An electric shutter in which an electrical circuit normally controls the automatic closing of the shutter lens aperture. A mechanical device in the shutter coactive with the electrical circuit closes the shutter lens aperture mechanically, automatically when the electrical circuit is deenergized or insufficiently energized because of an exhausted power source or because of other reasons.

3,829,878

FOCAL PLANE SHUTTER WITH GROUPS OF SHUTTER BLADES

Eiichi Onda, Misato; Mitsuo Koyama, and Tadashi Nakagawa, both of Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 12, 1973, Ser. No. 396,434

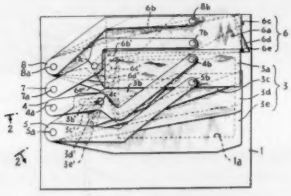
Claims priority, application Japan, Sept. 14, 1972, 47-107061

Int. Cl. G03b 9/36

U.S. Cl. 354—246 3 Claims

A focal plane shutter having two groups of shutter blades. One group opens the shutter and the other closes it. The groups each have a slit-forming shutter blade translated on a pair of levers. The remaining blades of each group are pivoted and pivotally actuated. The slit-forming shutter blades each

have a straight edge moved across the shutter aperture normal to a plane traversing the shutter aperture so that the exposure

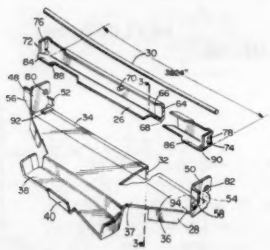


aperture is accurately developed as the shutter is opened or closed. The pivoted blades have an angle of movement that is minimum.

3,829,879
LOW-COST PHOTOGRAPHIC FLUID SPREADING APPARATUS

Sheldon D. Powers, Stoneham, and Earl R. Thoenen, Newburyport, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 133,906, April 14, 1971, abandoned. This application Aug. 9, 1973, Ser. No. 386,956
Int. Cl. G03b *17/52*
U.S. Cl. 354—304 **19 Claims**



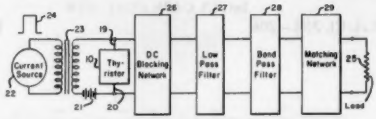
Fluid spreading apparatus for use in a camera of the self-developing type having a first sheet-contacting facing surface of relatively large radius arcuate crosssectional configuration and a second substantially flat sheet-contacting facing surface which co-act to exert a compressive force on superposed sheet materials as such materials are progressively drawn therebetween. A platform extends in front of the flat sheet-contacting facing surface and is canted at a predetermined angle with respect thereto. Extending in front of this platform is a ramp which is canted at a predetermined angle with respect to the platform to guide at least some of the sheet materials onto the platform as they are advanced from a film pack towards the sheet-contacting surfaces. Edge control members connected to the arcuate sheet-contacting surface urge longitudinal edges of one of the sheets into engagement with the other sheet in advance of the sheet-contacting surfaces.

3,829,880
SCHOTTKY BARRIER PLASMA THYRISTOR CIRCUIT

Surinder Krishna, Balston Lake, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 5, 1973, Ser. No. 321,409
Int. Cl. H01l *9/00*
U.S. Cl. 357—15 **10 Claims**

A plasma thyristor is provided for faster recycling of the plasma mode and sharper output signals. A silicon semiconductor body has a low impurity concentration preferably below 5×10^{14} atoms/cm^3, has first and second opposed major surfaces, and preferably has a width of greater than about 80 microns. A first Schottky barrier contact is made at the first major surface. A second Schottky barrier or ohmic contact is made at the second major surface. Power sources apply (i) a reverse bias voltage across the first Schottky barrier contact



between the contacts causing the carrier depletion field to extend from the first Schottky barrier contact the width of the body to the second contact, and (ii) a current pulse across the body between the contacts having a density greater than the saturation current density of the body. Preferably, the plasma thyristor is used to generate high power, fast rise-time electrical signals.

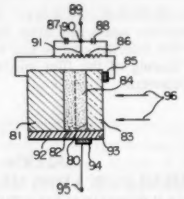
ERRATUM

For Class 357—023 see:
Patent No. 3,829,743

3,829,881
VARIABLE CAPACITANCE DEVICE

Tadao Kohashi, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Limited, Kadoma City, Osaka, Japan

Division of Ser. No. 72,695, Sept. 16, 1970, abandoned. This application July 10, 1972, Ser. No. 270,172
Claims priority, application Japan, Sept. 18, 1969, 44-75637; Sept. 22, 1969, 44-77179; Sept. 18, 1969, 44-76061
Int. Cl. H01l *15/00*
U.S. Cl. 357—23 **5 Claims**

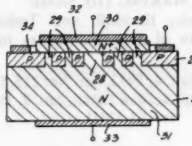


This specification discloses variable capacitance devices which vary their capacitances under the influence of DC bias voltages or radiations. One embodiment comprises a PN junction diode, a dielectric thin film deposited on the surface of said junction diode at which the junction terminates and a conducting electrode deposited on the dielectric thin film, in which the area of an equivalent plate electrode formed in said junction diode is varied by changing the thickness of a depletion region. In another embodiment, a nonlinear resistance layer deposited on the dielectric thin film is employed. As a DC voltage as applied to the nonlinear resistance layer is increased, the lateral conductivity of the nonlinear resistance layer increases and the area of the equivalent plate electrode facing the conducting electrode is increased. A further embodiment employs a thin film transistor of a MIS transistor to vary the area of the equivalent plate electrode provided therein.

3,829,882
VARIABLE RESISTANCE FIELD EFFECT TRANSISTOR

Michio Arai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,350
Claims priority, application Japan, Feb. 12, 1972, 47-15132
Int. Cl. H01l 11/14
U.S. Cl. 357—23 **5 Claims**

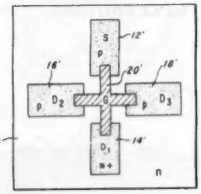


A variable resistance field effect transistor with a wide range of resistance and a linear ohmic characteristic having one or more small channels and one or more large channels formed by a gate region between a source region and a drain region in which both the small and large channels are located closer to the source electrode than to the drain electrode. The field effect transistor is such that as the gate voltage is changed from full drain current flow to pinch-off, the small channels are pinched off at first, after which the large channel or channels will reach a pinch-off voltage. In depletion type field effect transistors, with zero voltage on the gate electrode, the entire current through all of the small channels is much larger than the total current flowing through the large channels. The small channels may be of different size, since even if one channel is pinched off at a certain gate voltage, the next larger channel is not pinched off at that voltage. In another embodiment, the gate region is such that the channel area is gradually increased so that the pinch-off voltage is also gradually changed in accordance with the size of the channel.

3,829,883
MAGNETIC FIELD DETECTOR EMPLOYING PLURAL DRAIN IGFET

Robert Thomas Bate, 512 Westshore Dr., Richardson, Tex. 75080

Continuation of Ser. No. 285,291, Aug. 31, 1972. This application Nov. 9, 1973, Ser. No. 414,570
Int. Cl. H01l 17/00
U.S. Cl. 317—235 R **5 Claims**

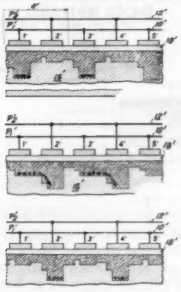


A mode of operation of a three-drain configured insulated gate field effect transistor which is extremely sensitive to magnetic fields is disclosed. The gate of the transistor is biased to a level less than transistor threshold, or alternatively, is connected to substrate ground. A first drain region opposite the source is biased to achieve avalanche breakdown of the junction. The other two drains are defined on either side of a line joining the source and first drain. These two drains are biased at a voltage below that required for avalanche of their junctions. In response to a magnetic field a voltage difference is generated across these two drains. In one embodiment of the invention, the region opposite the source is of a conductivity type the same as the substrate. In this configuration the detector does not require avalanche breakdown.

3,829,884
CHARGE-COUPLED DEVICE AND METHOD OF FABRICATION OF THE DEVICE

Joseph Borel, Echirolles; Jacques Lacour, Grenoble, and Gerard Merckel, La Tronche, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 13, 1972, Ser. No. 217,595
Claims priority, application France, Jan. 14, 1971, 71.01182
Int. Cl. H01l 11/14
U.S. Cl. 357—24 **4 Claims**



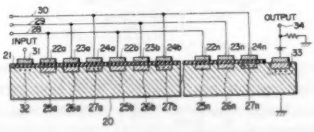
A charge-coupled device in which the storage and transfer of information in the form of changes consisting of minority carriers are carried out with only two clocks. The device comprises a doped semiconductor substrate coated with an insulating thin film carrying a linear series of conductive electrodes. A variably doped surface region of the substrate creates a potential barrier for the minority carriers upstream of a charge-storage region. The same value of potential is fixed respectively for the odd-numbered electrodes and for the even-numbered electrodes, these values being modified in cycles so as to transfer the charge from each alternate electrode to one of the adjacent electrodes.

A method of fabrication of the device consists in forming an insulating film and an assembly of conductive electrodes on a semiconductor substrate and in ion implantation by means of an ion beam in order to increase the doping of the substrate beneath one edge of the electrodes.

3,829,885
CHARGE COUPLED SEMICONDUCTOR MEMORY DEVICE

Junichi Nishizawa, Sendai, and Terumoto Nonaka, Shizuoka, both of Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai-shi, Miyagi-ken, Japan

Filed Oct. 12, 1972, Ser. No. 296,875
Int. Cl. H01l 11/14
U.S. Cl. 357—24 **27 Claims**



A charge coupled device has gold-containing regions in portions adjacent to the surface of an N type Si substrate being in contact with a SiO_2 film and corresponding to electrodes

disposed separately on the SiO_2 film. Holes introduced into the Si substrate are trapped in the gold-containing regions by the application to the electrodes, of an electric field having strength sufficient to produce an inversion region in the Si substrate, that is a P type region, in at least a part of the gold-containing regions within the Si substrate, so that the holes can be advantageously memorized for a long period of time, e.g., many hours, without applying an electric field to the charge coupled device.

3,829,886

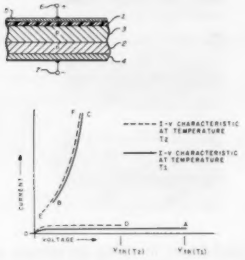
BISTABLE SEMICONDUCTOR TEMPERATURE SENSOR

Harry Kroger, Sudbury, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 21, 1973, Ser. No. 361,924

Int. Cl. H01l *3/00*

U.S. Cl. 357—28 **15 Claims**



A bistable semiconductor switching device for attachment to apparatus to be protected from overheating employs a diode configuration with a non-linear resistance layer and uses controlled conduction characteristics for providing major sensitivity to temperature of the transition point in the switching device between low and high impedance states. The existence of a transition point is sought by placing a wave form having a repeating envelope across the switching device. If, at some time after the start of the wave form, the sensor device makes a transition from its high to its low impedance state, the sensed large increase in current flowing through the switching device operates an alarm for warning purposes or other actuatable device for control purposes. Alternatively, temperature may be computed and directly displayed on the basis of the sensed transition point.

3,829,887

TARGET OF A CATHODE-RAY TUBE

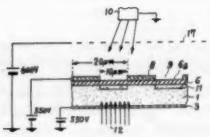
Takehumi Katow, Tokyo, Japan, assignor to Iwaski Tsushinki Kabushiki Kaisha (a/k/a Swatsu Electric Co., Ltd.), Tokyo-to, Japan

Filed Dec. 26, 1972, Ser. No. 318,641

Claims priority, application Japan, Dec. 24, 1971, 46-3154; Aug. 10, 1972, 47-79508

Int. Cl. H01l *15/00*

U.S. Cl. 357—31 **5 Claims**



A target of a cathode-ray tube comprises a semiconductor substrate of a single conductivity type monocrystalline semiconductor having a major surface uniformly coated by a highly insulating material layer, and a metallic electrode having a plurality of apertures formed therein disposed on a surface of the insulating layer. Another electrode is disposed on a second major surface of the substrate.

3,829,888

SEMICONDUCTOR DEVICE AND THE METHOD OF MAKING THE SAME

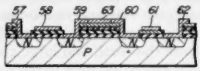
Norikazu Hashimoto, Hachioji, and Toshiaki Masuhara, Tokorozawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1972, Ser. No. 215,375

Claims priority, application Japan, Jan. 8, 1971, 46-248

Int. Cl. H01l *11/19*

U.S. Cl. 357—41 **4 Claims**



A semiconductor device comprising a p type semiconductor substrate including an n channel depletion mode metal-oxide-semiconductor field effect transistor provided with a gate insulating double layer formed of a silicon oxide layer and a phosphosilicate glass layer and an n channel enhancement mode metal-oxide-semiconductor field effect transistor provided with a gate insulating double layer formed of a silicon oxide layer and an alumina layer, the portions of the semiconductor substrate other than those where the field effect transistors are formed being provided with a double layer of a silicon oxide layer and an alumina layer, or of an alumina layer and a phosphosilicate glass layer.

3,829,889

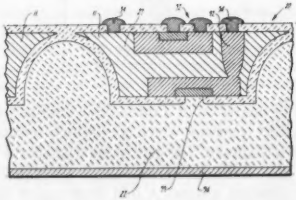
SEMICONDUCTOR STRUCTURE

David F. Allison, Palo Alto, and David A. Maxwell, Sunnyvale, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 338,802, Jan. 20, 1964, abandoned, which is a continuation-in-part of Ser. No. 330,697, Dec. 16, 1963, abandoned. This application Aug. 24, 1964, Ser. No. 391,704

Int. Cl. H01l *19/00*

U.S. Cl. 357—49 **13 Claims**



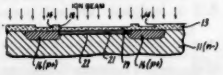
This invention relates to a semiconductor structure and method and more particularly to isolated integrated circuitry and method.

3,829,890

ION IMPLANTED RESISTOR AND METHOD

David S. Perloff, Sunnyvale; John T. Kerr, Cupertino, and James A. Marley, Saratoga, all of Calif., assignors to Corning Glass Works, New York, N.Y. and Signetics Corporation, Sunnyvale, Calif., part interest to each

Filed Nov. 1, 1971, Ser. No. 194,366
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 357—91 4 Claims



Ion implanted resistor formed in a body of crystalline semiconductor material of a first conductivity type and a known bulk resistivity with at least one region of implanted ions in the body having a conductivity opposite that of the body. The resistance changes no more than 3 percent from the room temperature value between −50 and 125°C. Between 0° and 70°C., the change is only 0.3 percent.

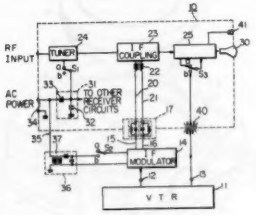
In the method, ion implanted resistors having the desired sheet resistivity are formed by varying the implantation energy and/or the thickness of a stopping layer. In addition, the resistor is annealed at a temperature ranging from 550°C. to 650°C.

3,829,891

SYSTEM FOR COUPLING MAGNETIC RECORDING AND REPRODUCING MACHINE WITH TELEVISION RECEIVER

Kasaku Uchida, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Limited, Kadoma, Osaka, Japan

Filed July 17, 1972, Ser. No. 272,225
Claims priority, application Japan, July 16, 1971, 46-53449; July 16, 1971, 46-53450
Int. Cl. H04n *5/78*; G11b *31/00*
U.S. Cl. 360—33 3 Claims



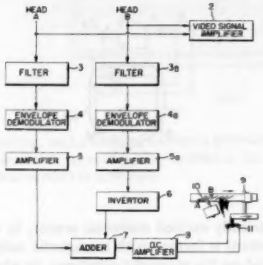
The system includes a video mudulator wherein a locally generated carrier wave of a certain frequency is modulated by a video signal from a video tape recording and reproducing machine, the modulated signal being delivered to a television receiver. A plurality of ganged switches have a first position to turn off the tuner of the television receiver and to simultaneously couple the modulated signal to the receiver's video if amplifier for reproduction on the screen. A second position turns the receiver's tuner on, disconnects the modulator from the receiver, and connects the machine to a second tuner, so that one can record video signals in one channel by the machine while observing picture information of another channel on the screen.

3,829,892

AUTOMATIC TRACKING MATCHING SYSTEM

Michinori Nagahiro, Nishinomiya; Masahiro Deguchi, and Akio Kuroe, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 8, 1973, Ser. No. 321,738
Claims priority, application Japan, Jan. 17, 1972, 47-7156
Int. Cl. G11b *5/52, 19/28*
U.S. Cl. 360—73 10 Claims



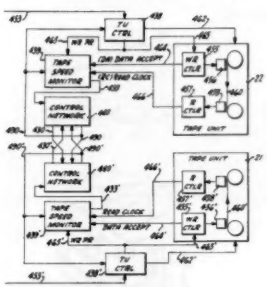
Control signals with a predetermined level are recorded in parallel with the information signal recording tracks which are recorded upon a recording medium being in parallel with each other, spaced apart from each other by a predetermined distance and inclined at an angle relative to the direction of the transport of the recording medium. The speed of the recording medium is so controlled that the relative position of the control signals relative to the reproducing head or heads or the degree of overlap of the control signals over the information signal recording track may be maintained constant and the level of the control signals reproduced may be maintained constant when the control signals are reproduced by the information signal reproducing head or heads.

3,829,893

TAPE SPEED MONITOR

James R. Baichtal, Los Altos, Calif., assignor to Vidar Corporation, Mountain View, Calif.

Filed May 29, 1973, Ser. No. 365,029
Int. Cl. G11b *15/22*
U.S. Cl. 360—73 16 Claims



Disclosed is a tape speed monitor for monitoring the speed of magnetic tape in a magnetic tape storage unit and for providing an error signal whenever the tape speed is not within a predetermined range. The tape speed is measured by comparing the lapsed time between written data and the same data reread during the normal operation of a read-after-write tape unit. Two tape speed monitors are employed in combination within a redundant, highly reliable telephone local message metering system.

3,829,894

PARAMETRIC MAGNETIC SENSOR

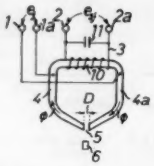
Teruji Watanabe, Niza; Takasuke Fukui, Tokyo, and Shizuo Suzuki, Kawasaki, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-To, Japan

Filed Oct. 18, 1972, Ser. No. 298,572

Claims priority, application Japan, Oct. 22, 1971, 46-83719; June 13, 1972, 47-58206

Int. Cl. G11b 5/30, 5/34

U.S. Cl. 360—111 7 Claims



A parametrically excited magnetic sensor, in which an inductance element is formed with a magnetic substance and a winding wound on the magnetic substance, in which a capacitor is connected in parallel to the winding to form a resonance circuit, in which an AC exciting current magnetic field is applied to the magnetic substance to generate a second harmonic oscillation wave having a frequency twice the frequency of the AC exciting current in the resonance circuit, so that a minute magnetic field is detected by utilizing a change in the phase of the second harmonic oscillation wave caused in accordance with the polarity of the minute magnetic field. The magnetic substance forms a part of magnetic circuit having a narrow gap so that the gap portion issued as a magnetic detecting head.

3,829,895

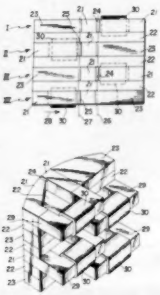
MULTI-CHANNEL MAGNETIC HEAD WITH OFFSET GAP LINES

Takashi Tanaka, Osaka, and Yasuo Nomura, Hyogo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Continuation of Ser. No. 64,608, Aug. 17, 1970, which is a division of Ser. No. 882,926, May 8, 1969, abandoned. This application Aug. 27, 1973, Ser. No. 391,753

Int. Cl. G11b 5/24, 5/14

U.S. Cl. 360—121 5 Claims



A multichannel magnetic head is provided with two offset gap lines formed in the face of the core tips. Non-magnetic material insulates adjacent core tips, and cross-talk is reduced by an over-lapping core construction. Various length back cores are provided to minimize the head size; but reluctances are equalized by varying core material, core cross-sectional area, or the gap between the back and the tip cores.

3,829,896

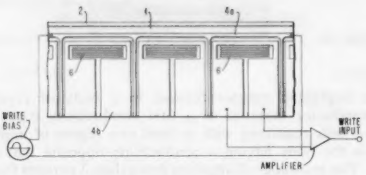
BIAS MEANS FOR BATCH FABRICATED MAGNETIC HEAD AND METHOD OF MANUFACTURE THEREOF

George W. Brock; Maxwell R. Cannon, both of Boulder, and Frank B. Shelledy, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1972, Ser. No. 304,691

Int. Cl. G11b 5/20, 5/42, 5/22

U.S. Cl. 360—125 19 Claims



A bias current path for a plurality of thin film, batch fabricated magnetic recording heads is placed on a substrate in the same plane as the recording windings. The active portion of the bias path surrounds a recording conductor and both the path and conductor are encompassed by a plurality of head pole pieces.

3,829,897

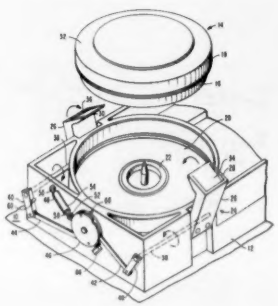
CARTRIDGE CLAMP

Robert F. Stebe, Thousand Oaks, Calif., assignor to VRC California Inc., Los Angeles, Calif.

Filed May 4, 1973, Ser. No. 357,197

Int. Cl. G11b 25/04

U.S. Cl. 360—133 16 Claims



A magnetic disc cartridge memory unit is disclosed having a pair of interconnecting clamping members releasably holding a disc cartridge in the memory unit when the clamping members are in a first position, and allowing removal or replacement of the cartridge when the clamping members are moved into a second position. The clamping members are interconnected so that movement of one into one of the positions results in movement of the other clamping member into a corresponding position, and vice versa. A rod rigidly couples each of the clamping members to a cranking element. Each cranking element is pivotally coupled at the end opposite the rod to a different elongated connecting element. A circular element

rotatably mounted between the cranking elements is pivotally coupled at opposite ends to the elongated connecting elements. A biasing unit coupled between the base and the circular element biases the circular element in one or the other of two opposite positions.

3,829,898

MARKING DEVICE IN A DICTATING APPARATUS

Lothar Jager, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

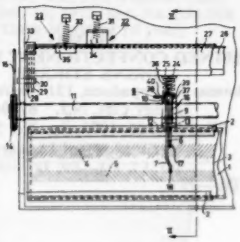
Filed Mar. 14, 1973, Ser. No. 340,956

Claims priority, application Austria, Mar. 23, 1972, 2511/72

Int. Cl. G11b 27/34

U.S. Cl. 360—137 2 Claims

The invention relates to a marking device for use in a recording and/or playback apparatus, specifically a dictation machine. The device has two superposed scribers which can be moved independently of each other toward an index strip for marking. The two scribers are retained in the rest position



by a single spring, and a locking device is provided for at least one of the scribers, to retain this scriber in its rest position when the other scriber is actuated.

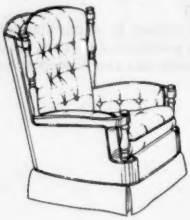
DESIGNS

AUGUST 13, 1974

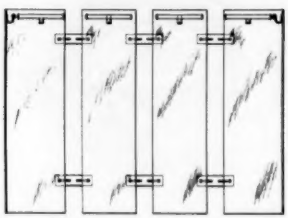
232,330
COMBINED CONFECTIONERY STICK AND DRINK STIRRER
Thomas J. Cappadona, 131 Glenwood Ave., Jersey City, N.J. 07306
Filed Feb. 16, 1973, Ser. No. 333,209
Term of patent 14 years
Int. Cl. D1—*99*; D7—*04*
U.S. Cl. D1—99

232,331
SEAT
Thomas Winrow, 530 S. Sleight St., Naperville, Ill. 60540
Filed Aug. 2, 1972, Ser. No. 277,432
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62

232,332
CHAIR
Thomas Winrow, 530 S. Sleight St., Naperville, Ill. 60540
Filed Dec. 30, 1971, Ser. No. 214,533
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



232,333
JEWELRY DISPLAY RACK
Robert D. Joyce, Glocester, R.I., assignor to Richton International Corporation, New York, N.Y.
Filed Jan. 29, 1973, Ser. No. 327,755
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—139

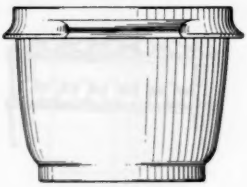


232,334
INDEX CARD HOLDER
Hildaur L. Neilsen, Metuchen, N.J., assignor to Zephyr American Corporation, Long Island City, N.Y.
Filed Jan. 15, 1973, Ser. No. 323,755
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—140

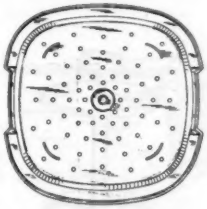
232,335
COUNTER DISPLAY STAND FOR CIGARETTE PACKAGES
William H. Glover, Locust, George E. Schmidt, Jr., Highlands, and Kenneth J. Donnelly, Long Branch, N.J., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed July 25, 1972, Ser. No. 274,941
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181

232,336
DISPOSABLE PLASTIC DISH
Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Original design application Jan. 31, 1972, Ser. No. 222,428, now Patent No. 229,812, dated Jan. 8, 1974. Divided and this application May 7, 1973, Ser. No. 358,177
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1

232,337
SERVING BOWL OR THE LIKE
Edward N. Montesi, Barrington, R.I., assignor to Dart Industries, Inc., Los Angeles, Calif.
Filed Jan. 16, 1973, Ser. No. 324,008
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—20



232,338
COLANDER
Robert Daenen, Erembodegem, Belgium, assignor to Dart Industries, Inc., Los Angeles, Calif.
Filed Apr. 23, 1973, Ser. No. 353,284
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47



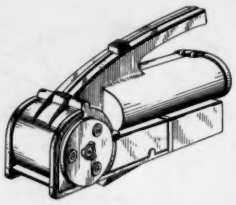
232,339
MILK CARTON HOLDER
James G. Wise, 3725 NW. 34th St., Oklahoma City, Okla. 73112
Filed Mar. 27, 1972, Ser. No. 238,733
Term of patent 14 years
The portion of the term of the patent subsequent to Feb. 2, 1988, has been disclaimed
Int. Cl. D7—*06*
U.S. Cl. D7—70

232,340
WINE BOTTLE RACK
Michael Lax, New York, N.Y., assignor to Julie Pomerantz, Inc., New York, N.Y.
Filed May 26, 1972, Ser. No. 257,472
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D7—71

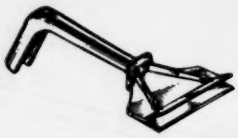
232,341
COMBINED TRAY AND TUMBLER HOLDER
Manus Mudde, Berkel-Enschot, Netherlands, assignor to Dart Industries, Inc., doing business as The West Bend Company, West Bend, Wis.
Filed Jan. 22, 1973, Ser. No. 325,922
Claims priority, application Switzerland Aug. 4, 1972
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—71

232,342
PROTECTIVE GUARD FOR CUTLERY
Udo Bosnyak, Mariazellerstr. 70, 8605 Kapfenberg, Austria
Filed Mar. 10, 1972, Ser. No. 233,853
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—74

232,343
ORNAMENTAL DESIGN FOR A CORDLESS ELECTRIC BROOM
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Mar. 26, 1973, Ser. No. 344,609
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—164

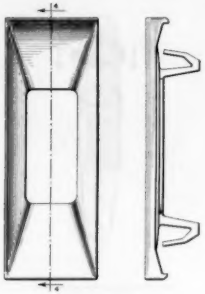


232,344
COOKING GRILL SCRAPER
Peter Momcilovich, 6515 58th NE., Seattle, Wash. 98115
Filed June 7, 1972, Ser. No. 260,717
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—184



232,345
TOGGLE SWITCH OPERATING DEVICE
Stuart J. Roberts, Denville, N.J.; Harold Rosenbaum, 29 Brittany Road, Montville, N.J. 07045; and Sol Inspector, 59 Fairfield Ave., West Caldwell, N.J. 07006; said Roberts assignor to said Rosenbaum and said Inspector
Filed Aug. 27, 1973, Ser. No. 391,776
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—183

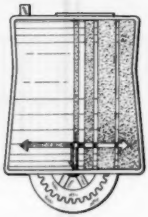
232,346
ESCUTCHEON PLATE FOR AN ELECTRICAL DEVICE
Giovanni Cali, Piazza del Liberty 8, Milan, Italy
Filed Nov. 23, 1971, Ser. No. 201,622
Term of patent 3½ years
Int. Cl. D8—*09;* D13—*03*
U.S. Cl. D8—188



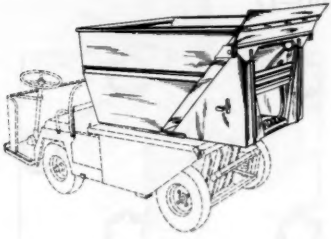
232,347
BOTTLE
Stefan Macko, Milwaukee, Wis., assignor to Miller Brewing Company, Milwaukee, Wis.
Filed Sept. 15, 1972, Ser. No. 289,494
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1

232,348
DISPENSING PACKET OR THE LIKE
Charles E. Cloud, Wilmette, Ill., assignor to Cloud Machine Corporation, Skokie, Ill.
Filed Dec. 3, 1971, Ser. No. 204,780
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192

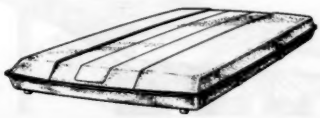
232,349
LINEAR DISTANCE MEASURING DEVICE
Nicholas G. Polydoris, Kenilworth, and Burnell J. Wollar, Barrington, Ill., assignors to ENM Company, Chicago, Ill.
Filed Oct. 13, 1972, Ser. No. 297,235
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



232,350
DUMP BODY FOR SMALL TRUCK
Roy F. Broyhill, Dakota City, Nebr. 68731
Filed Feb. 14, 1972, Ser. No. 226,394
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—15

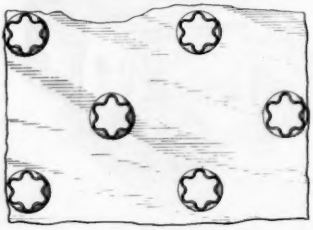


232,351
CAR TOP CAMPER
Satoru Nozaki, Toyota, and Fukuo Matsui, Yokohama, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed Feb. 20, 1973, Ser. No. 333,724
Claims priority, application Japan Oct. 20, 1972
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—156

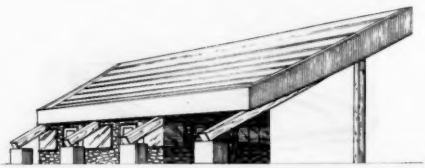


232,352
PROPELLER FOR LOG LINE KNOTMETER
Fred W. Tann, Los Angeles, Calif., assignor to Dawn Electronics, Hawthorne, Calif.
Filed Apr. 7, 1972, Ser. No. 242,277
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—214

232,353
TREAD PLATE MATERIAL OR THE LIKE
Benjamin Sieradzki, Berkeley, Calif., assignor to Chemetron Corporation, Chicago, Ill.
Filed Nov. 17, 1971, Ser. No. 199,832
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



232,354
DWELLING
William J. Whitaker, 3517 Imperial Highway, Lynwood, Calif. 90262
Filed July 24, 1972, Ser. No. 274,380
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



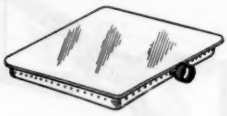
232,355
COVERED TEST TUBE
Gerhard Wiedmann, Butzberg, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland
Filed May 23, 1973, Ser. No. 363,243
Claims priority, application Switzerland Jan. 11, 1973
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—1 R

232,356
ARROW TAIL FEATHER
Francis W. Melton, 1306 47th St., Des Moines, Iowa 50310
Filed May 10, 1973, Ser. No. 359,098
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—12

232,357
AUTOMATIC HOOK SETTER
Vaughnie B. Langwell, 4002 E. 15th St., Amarillo, Tex. 79104
Filed May 21, 1973, Ser. No. 362,474
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

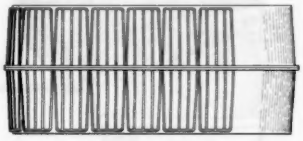
232,358
FISH HOOK BAITER
Charles C. Gray and Klena B. Gray, both of 608 N. Jefferson, Hutchinson, Kans. 67501
Filed Nov. 13, 1970, Ser. No. 25,979
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31

232,359
GARDEN SOAKER
William W. Robinson, Birmingham, Mich. (1012 E. Wilson Ave., Apt. 5, Glendale, Calif. 91206)
Filed Mar. 31, 1972, Ser. No. 240,334
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—6

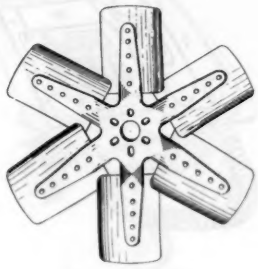


232,360
PLUMBING VENT VALVE
Robert R. Watts, Blue Springs, Mo., assignor to Watco Plastics, Inc.
Filed May 11, 1972, Ser. No. 252,528
Term of patent 7 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

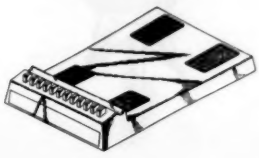
232,361
CASING FOR REFRIGERATION SYSTEM CONDENSING UNITS OR THE LIKE
William C. Martin, Jr., Syracuse, Walter W. Hoyle, Fayetteville, and Fred V. Honnold, Jr., North Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Continuation-in-part of abandoned design application Ser. No. 233,852, Mar. 10, 1972. This application July 2, 1973, Ser. No. 375,566
Term of patent 7 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



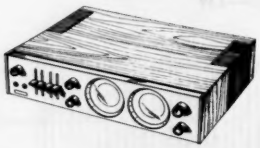
232,362
FAN
Bern M. Bonifant, Tacoma, Wash., assignor to Flex-A-Lite Corporation, Tacoma, Wash.
Filed July 13, 1973, Ser. No. 379,166
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—165



232,363
TELEPHONE STAND WITH INDEX
Yuen Se-Kit, 46 Hoi Yuen Road, 4th Floor, Kwun Tong, Kowloon, Hong Kong
Filed Apr. 11, 1972, Ser. No. 243,111
Claims priority, application Great Britain Oct. 14, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



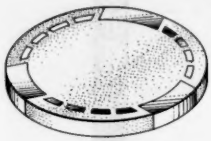
232,364
COMBINED AMPLIFIER AND SPEAKER
Yoshiaki Iida and Hanji Takahashi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 20, 1973, Ser. No. 343,051
Claims priority, application Japan Sept. 20, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 G



232,365
INTERCOMMUNICATION INTERCONNECT TELEPHONE
Steven T. Churchill, Wilton, Athanassios Iliakidis, Norwalk, and Richard B. Pell and Jonas M. Shapiro, Stamford, Conn., assignors to Executone, Inc., Long Island City, N.Y.
Filed Aug. 15, 1973, Ser. No. 388,684
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

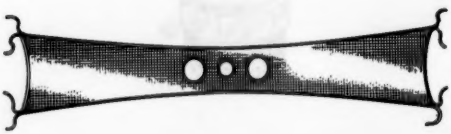
232,366
CHRISTMAS ORNAMENT
Richard F. Goonen, 107 Washington St., Lafayette, Ind. 47905
Filed Apr. 30, 1973, Ser. No. 355,934
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 B

232,367
GAME CHIP
Joseph H. Garaventa, Reno, Nev., assignor to Harrah's Club, Reno, Nev.
Filed Mar. 20, 1972, Ser. No. 236,540
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 PC

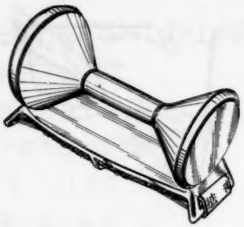


232,368
EXERCISER
Eugene A. Shales, 3901 Los Feliz Blvd., Apt. 207, Los Angeles, Calif. 90027
Filed Aug. 11, 1972, Ser. No. 279,846
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

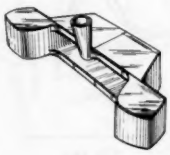
232,369
APERTURED NET FOR HANDBALL PLAYING GAMES
McKinley Tolliver, 3867 Cardinal Blvd., Daytona Beach, Fla. 32019
Filed Oct. 10, 1972, Ser. No. 296,211
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 PP



232,370
SIT-UP EXERCISER
John Hasekian, 108 Putnam, Watertown, Mass. 02172
Filed Oct. 16, 1972, Ser. No. 297,781
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

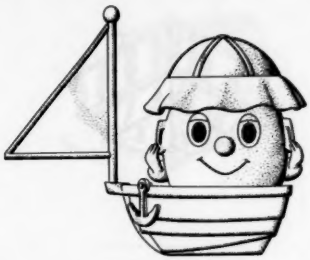


232,371
GOLF PUTTER HEAD
Jerome E. Becker, 3285 Woodbine St., Los Angeles, Calif. 90064
Filed Dec. 15, 1972, Ser. No. 315,412
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

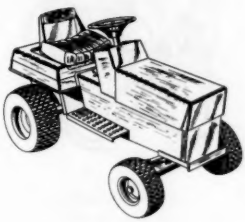


232,372
ANTI-CROSSING ATTACHMENT FOR SKIS
Douglas L. Grant, 11 Bayview Road, Marblehead, Mass. 01945
Filed Nov. 14, 1973, Ser. No. 415,822
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D

232,373
HUMPTY DUMPTY SAILOR TOY
Paul L. Luzius, Brentwood, Tenn., and Jerrold J. Krumholz, West Orange, N.J., assignors to Kusan, Inc., Nashville, Tenn.
Filed May 22, 1973, Ser. No. 362,655
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ

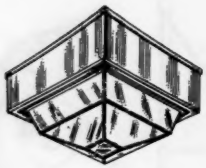


232,374
TRACTOR
Douglas Raymon Houst, Pattersonville, James Wesley Stackhouse and Carlton La Verne Wetherby, Scotia, and Donald Scott Cooper, Schenectady, N.Y., assignors to General Electric Company
Filed Dec. 13, 1972, Ser. No. 314,731
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5 R

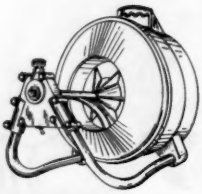


232,375
FINGER RING
Bernard I. Mechanic, 9314 Lincolnwood Drive, Evanston, Ill. 60203
Filed Apr. 2, 1973, Ser. No. 346,958
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

232,376
LUMINAIRE
Theodor G. Yahraus and James L. Grindle, Hendersonville, N.C., assignors to General Electric Company
Filed Feb. 20, 1973, Ser. No. 334,115
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



232,377
SEWER AND DRAIN PIPE CLEANING MACHINE
Henry G. Peterson, Des Moines, and Tom Grimes, Altoona, Iowa, assignors to Roto Rooter Corporation, West Des Moines, Iowa
Filed Apr. 16, 1973, Ser. No. 351,264
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—10

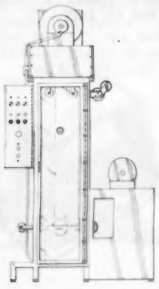


232,378
PAPER TOWEL DISPENSER
Mary Ann Keith, 7401 W. 103rd, Lenexa, Kans. 66212
Filed Nov. 19, 1971, Ser. No. 200,665
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D52—2 C

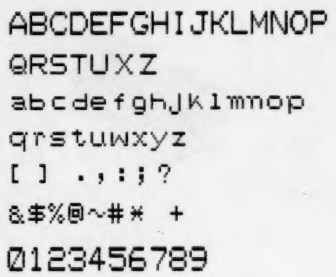
232,379
SUNGLASSES
Robert Arner, 638 Iron St., Lehighton, Pa. 18235
Filed June 19, 1973, Ser. No. 371,388
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 D

232,380
PAIR OF SPECTACLES
David W. Johnsen, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Aug. 20, 1973, Ser. No. 389,902
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

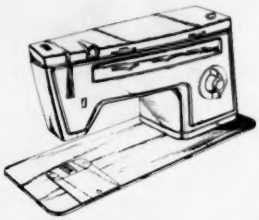
232,381
PHOTOGRAPHIC PRINT DRYER
John N. Harman, Jr., La Canada, and James S. Livingood, Reseda, Calif., assignors to Drewry Photocolor Corporation, Burbank, Calif.
Filed Mar. 27, 1972, Ser. No. 238,740
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1 Q



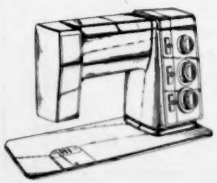
232,382
FONT OF TYPE
Kozo Yamamoto, Hirakata, and Toshio Watahiki, Kadoma, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan
Filed Apr. 24, 1972, Ser. No. 247,261
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



232,383
SEWING MACHINE FRAME OR SIMILAR ARTICLE
Donald M. Genaro, Haworth, N.J., assignor to The Singer Company, New York, N.Y.
Filed Mar. 20, 1973, Ser. No. 334,178
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D70—1

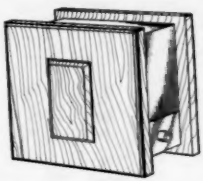


232,384
SEWING MACHINE FRAME OR SIMILAR ARTICLE
George D. La Police, Somerville, and Wayne A. Current, Cranford, N.J., assignors to The Singer Company, New York, N.Y.
Filed Mar. 29, 1973, Ser. No. 346,234
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D70—1

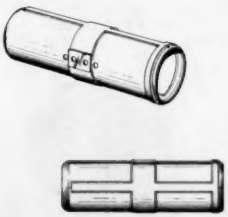


232,385
SEWING MACHINE FRAME
Michael P. Ballone, New Providence, N.J., assignor to The Singer Company, New York, N.Y.
Filed May 18, 1973, Ser. No. 361,722
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D70—1

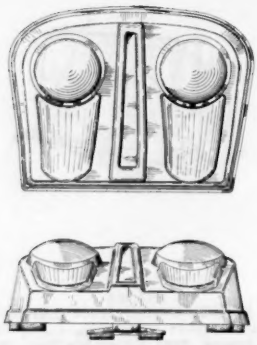
232,386
SMOKE DETECTION UNIT
Jeffrey E. Hamm, 7432 Eastbourne Circle 84121, and Robert S. Jenson, 2981 Middleton Way 84117, both of Salt Lake City, Utah
Filed Feb. 8, 1973, Ser. No. 330,528
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 R



232,387
RECEPTACLE FOR NEWSPAPERS AND THE LIKE
Edward H. Coy III and Robert John Halisey, both of Lookout Drive, Lake Hayward, Colchester, Conn. 06415
Filed Feb. 1, 1973, Ser. No. 328,867
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D74—9 R



232,388
FOOT MASSAGER
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co.
Filed June 20, 1973, Ser. No. 371,736
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D83—1 S



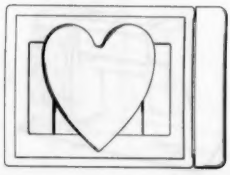
232,389
MEDICAL TWEEZERS
Per Danielsson, Ljungby, and Göte Karlsson, Gnosjo, Sweden, assignors to Per Danielsson and Göte Karlsson
Filed Mar. 15, 1972, Ser. No. 235,108
Term of patent 14 years
Int. Cl. D24—*02;* D8—*05*
U.S. Cl. D83—12 R

232,390
ACCESSORY HAIRPIECE
Christopher John Vincent White, 53 Eglantine Road, London SW. 18, England
Filed July 6, 1973, Ser. No. 377,075
Claims priority, application Great Britain Jan. 19, 1973
Term of patent 3½ years
Int. Cl. D28—*04*
U.S. Cl. D86—10 J

232,391
ACCESSORY HAIRPIECE
Christopher John Vincent White, 53 Eglantine Road, London SW. 18, England
Filed July 6, 1973, Ser. No. 377,076
Claims priority, application Great Britain Jan. 19, 1973
Term of patent 3½ years
Int. Cl. D28—*04*
U.S. Cl. D86—10 J

232,392
ACCESSORY HAIRPIECE
Christopher John Vincent White, 53 Eglantine Road, London SW. 18, England
Filed July 6, 1973, Ser. No. 377,077
Claims priority, application Great Britain Jan. 19, 1973
Term of patent 3½ years
Int. Cl. D28—*04*
U.S. Cl. D86—10 J

232,393
COMBINED TAPE CASSETTE HOLDER AND PICTURE FRAME
Michael H. Barkman, Palatine, Ill., assignor to Wabash Tape Corporation, Des Plaines, Ill.
Filed Apr. 3, 1972, Ser. No. 240,886
Term of patent 7 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 D



232,394
STORAGE TRAY FOR A CASSETTE AND FILM STRIPS

Allen S. Braverman, Paramus, N.J., assignor to Plastic Reel Corporation of America, Carlstadt, N.J.

Filed Oct. 24, 1972, Ser. No. 300,020
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D

232,395
SHAVER

J. Edward Brenneman and Robert S. Waters, Lancaster, Pa., assignors to Schick Incorporated, Lancaster, Pa.

Filed Feb. 16, 1973, Ser. No. 333,026
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF AUGUST, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & C Park Incorporated: *See*—
Park, Alexander C., 3,829,117.

Aarna, Agu Yanovich; Kiisler, Karl Ritsovich; Gerkhardovich, Peep; and Tanner, Juri Albert-Mikhaelovich, to Tallinsky Politeknichesky Institut. Method of producing resorcinol resins by reacting with N-methylol caprolactam. 3,829,528, Cl. 260-841.000.

AB Bygg-Och Transportekonomi (BT): *See*—
Bryntse, Anders Ivar; and Berkestad, Karl Erik, 3,828,650.

AB Printing Equipment: *See*—
Eriksson, Algot Ingemar, 3,829,702.

Abbott, Charles Theodoric, Jr.; and Smith, George Cummingha, Jr., to Procter & Gamble Company, The. Detergent compositions containing n-chloro-imides. 3,829,385, Cl. 252-95.000.

ABC Packaging Machine Corporation: *See*—
Reichert, Donald G., 3,828,659.

Abe, Atsushi: *See*—
Tsuchiya, Toshio; and Abe, Atsushi, 3,828,872.

Abe, Takeshi, to Ricoh Co., Ltd. Card-storing device. 3,829,188, Cl. 312-184.000.

Abraham, Marvin M.: *See*—
Chen, Yok; and Abraham, Marvin M., 3,829,391.

Abrams, Aubrey Leon, to General Stationery Supplies (Proprietary) Limited. Tethered ball apparatus. 3,829,093, Cl. 273-95.00a.

Acme-Cleveland Corporation: *See*—
Flueckiger, Noah, 3,828,901.

Adamovke Strojirny Narodni podnik: *See*—
Jurny, Josef, 3,829,084.

Adams, Guy E., to Solitron Devices, Inc. Electronic ignition system. 3,828,751, Cl. 123-148.00e.

Adams Robert T.; Heath, William A.; and Wuopio, Richard A., to Chevron Research Company. Isobutane oxidation to produce alcohol useful in motor fuel. 3,829,510, Cl. 260-632.00c.

Addressograph-Multigraph Corporation: *See*—
Shelffo, Loren E., 3,829,314.

Aepli, Otto T.: *See*—
Wegst, Walter F.; and Aepli, Otto T., 3,829,386.

Aerospace Corporation, The: *See*—
Birnbaum, Milton, 3,829,696.

Aerpat A.G., Zug: *See*—
Sheffield, David John; Prosser, Paul Edward; and Charman, Bernard William, 3,828,603.

AGFA-Gevaert Aktiengesellschaft: *See*—
Meeussen, Louis Achilles; Bestenreiner, Friedrich; and Huber, Hans-Peter, 3,829,610.
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; and Schroeder, Rolf, 3,829,875.
Zahn, Wolfgang; Weinert, Volker; Thiene, Hans; and Hujer, Friedrich, 3,829,214.

AGFA-Gevaert N.V.: *See*—
Pietermaat, Francois Paul; Peytier, Andre; and Berckmans, Walter, 3,829,608.

Aggogle Inc.: *See*—
Shorin, Joseph E.; and Ricci, Vero, 3,828,995.

Aghnides, Elie P. Spray producing device. 3,829,026, Cl. 239-394.000.

Aginfor AG fur Industrielle Forschung: *See*—
Guttinger, Heinrich, 3,829,256.

Aglitsky, Vladimir Efimovich: *See*—
Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich; Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich, 3,829,042.

Ahlbom, Sten H.; and Hansson, Sture J., H., to Saah-Scania Aktiebolag. Automatic video contrast tracker. 3,829,614, Cl. 178-6.800.

Ahrendt, Donald A., to Allis-Chalmers Corporation. Pivoted overhead guard. 3,829,121, Cl. 280-150.00c.

Aichele Associates, Inc.: *See*—
Marshall, John J., 3,829,753.

Ainoura, Masato, to Tsukihoshi Gomu Kabushiki Kaisha (The Moon-Star Rubber Ltd.) and Kabushiki Kaisha Kashifuji Tekkosho (Kabushifuji Works, Ltd.). Method of forming a screw shaped gear hone. 3,829,298, Cl. 51-298.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Inada, Masami, 3,829,169.

Aizawa, Hiroshi; Sunouchi, Akio; and Ogiso, Mitsutoshi. Camera having a retainable exposure control device. 3,829,868, Cl. 354-45.000.

Akai Electric Company Limited: *See*—
Sakamoto, Hiroo, 3,829,178.

Akin, Alfred A., Jr: *See*—
Van Exel, Gerrit A.; and Akin, Alfred A., Jr, 3,829,194.

Akred, Brian John: *See*—
Sowerby, Austen Edgar; and Akred, Brian John, 3,829,484.

Aktiebolaget Bofors: *See*—
Nilsson, Per-Erik; and Sjogren, Bengt-Ake Harald, 3,829,852.

Aktiebolaget Fredr. Wagner: *See*—
Oestergren, Henrik William Stig, 3,828,917.

Aktiebolaget Svenska Elektromagneter: *See*—
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Aktiebolaget Svenska Tlaktfabriken: *See*—
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Aktieselskabet Niro Atomizer: *See*—
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Albright & Wilson Limited: *See*—
Sowerby, Austen Edgar; and Akred, Brian John, 3,829,484.

Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, to American Home Products Corporation. Hydroxamic acid esters of pentanecarboxylic acids. 3,829,459, Cl. 260-453.00r.

Alburn, Harvey E., to American Home Products Corporation. Method of treating neisseria gonorrhoae with dihydroampicillin. 3,829,576, Cl. 424-271.000.

Alco Standard Corporation: *See*—
Wulf, Karl A., 3,829,283.

Aldinger, Ulrich; Kersten, Gunter; and Knodel, Emil, to Robert Bosch GmbH. Slide shoe and piston arrangement. 3,828,653, Cl. 91-488.000.

Alexander, David Ord, 15% to Wiczer, Sol B. Underwater speaking device. 3,828,887, Cl. 181-126.000.

Alexander, George F.: *See*—
Oestmann, Eldon D.; and Alexander, George F., 3,829,172.

Alexandrov, Adolf Martitsovich: *See*—
Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich; Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich, 3,829,042.

Alfrich, Floyd E.; and Hovey, Fred A., to GTE Sylvania Incorporated. Deflection yoke mounting assembly. 3,829,804, Cl. 335-210.000.

Alker, Heinrich, to Olbo Textilwerke GmbH, Firma. Two-component yarns. 3,828,544, Cl. 57-152.000.

Allais, Andre; Meier, Jean; and Dube, Jacques, to Roussel-Uclof. Novel benzoylphenylacetic acid esters in the treatment of pain and inflammation. 3,829,585, Cl. 424-278.000.

Allan, William Bell; Rattle, Jeffrey Douglas; and Atkinson, Arthur Gordon. Rank Organisation Limited, The Optical signalling. 3,829,857, Cl. 340-380.000.

Allen Electric and Equipment Company: *See*—
Nigg, William, 3,829,773.

Allied Chemical Corporation: *See*—
Litke, Alvin Carl, 3,829,287.

Allis, Louis, Company, The: *See*—
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Allis-Chalmers Corporation: *See*—
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Pelanz, Herbert M., 3,829,707.
Sutton, Max E., 3,829,128.

Allison, David F.; and Schweizer, John E., Jr., to Scientific Micro Systems, Inc. Method for processing semiconductor wafers. 3,829,335, Cl. 148-189.000.

Allison, David F.; and Maxwell, David A., to Signetics Corporation. Semiconductor structure. 3,829,889, Cl. 357-49.000.

Allmanna Svenska Elektriska Aktiebolaget: *See*—
Larsson, Hans-Gunnar; and Bergman, Carl, 3,829,261.
Thorborg, Kjeld, 3,829,759.

Alpermann, Hans-Georg: *See*—
Bartmann, Wilhelm; and Alpermann, Hans-Georg, 3,829,571.
Bartmann, Wilhelm; Alpermann, Hans-Georg; and Jochum, Christian, 3,829,572.

Aluminum Company of America: *See*—
Hawkins, Ronald G., 3,829,825.

Alvarez, Guillermo Diaz, to Gee-Dee International, Inc. Method and apparatus for processing soil for planting. 3,828,859, Cl. 172-50.000.

Alvarez, Luis W., to Humphrey Research Associates, mesne. Method of forming an optical element of reduced thickness. 3,829,536, Cl. 264-1.000.

Alyanak, Edward J., to Bendix Corporation, The. Method of spectral analysis. 3,829,218, Cl. 356-74.000.

Alza Corporation: *See*—
Ness, Richard A., 3,828,777.

Amakasu, Mitsuzi: *See*—

Yoshida, Tokuji; and Amakasu, Mitsuzi, 3,828,538.

Amchem Products, Inc., mesne: *See*—
Miki, Shinsuke; and Nishida, Takao, 3,829,371.
Rosenthal, Henry, 3,829,537.

Amercian Home Products Corporation: *See*—
Wise, Louis M.; and Bozek, Edmund J. Jr., 3,829,387.

American Bank Note Company: *See*—
Gazzola, Ivaldo, deceased; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,828,672.
Gazzola, Ivaldo, deceased; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,828,673.

American Can Company: *See*—
Feinberg, Jacob Howard, 3,829,369.
Zugcic, Joseph Paul, 3,828,668.

American Cyanamid Company: *See*—
Deb, Satyendra Kumar, 3,829,196.

American Cystoscope Makers, Inc.: *See*—
Curtiss, Lawrence F.; and Hall, Richard W., 3,828,790.

American Flange & Manufacturing Co. Inc.: *See*—
Laurizio, Jeremiah J., 3,828,418.

American Home Products Corporation: *See*—
Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,829,459.
Alburn, Harvey E., 3,829,576.
Wolf, Milton; Sellstedt, John H.; and Fenichel, Richard L., 3,829,488.

American Metal Climax, Inc.: *See*—
Ronzio, Richard A.; Lane, John W.; and Vincent, John D., 3,829,550.

American Telephone and Telegraph Company: *See*—
Brandon, Arthur Cecil, 3,829,618.

Ammco Tools, Inc.: *See*—
Mitchell, Wallace F., 3,828,487.

Amoroso, Salvatore, Jr., to United Aircraft Corporation. Call apparatus in a single oscillator microwave transceiver. 3,829,778, Cl. 325-17.000.

AMP Incorporated: *See*—
Derr, Paul B.; Ferdon, Gilbert Douglas; and Harwood, Robert George, 3,829,821.

Amtmann, Jurgen: *See*—
Smitzer, Louis A.; and Amtmann, Jurgen, 3,829,215.

Anaconda Company, The: *See*—
Hansen, Theodore E.; and Moran, Thomas M., 3,829,603.

Anderle, Joseph A.; and Neira, George, to Levolor Lorentzen, Inc. Venetian blind having tilt-limiting attachment. 3,828,838, Cl. 160-176.000.

Andersen, Joseph J., to Evans, Chandler, Inc. Fluidic valve modulator. 3,829,058, Cl. 251-25.000.

Anderson, Arthur A., to Specialty Manufacturing Company. Valve assembly. 3,828,817, Cl. 137-625.470.

Anderson, Bernard Fornelius, to Du Pont de Nemours, E. I., and Company. Agricultural mulch films adapted for plant penetration. 3,828,471, Cl. 47-9.000.

Anderson, Forrest Symington, to Anderson Mavor Limited. Overload cut-out mecanism for mining machine mechanical haulage mechanism. 3,828,900, Cl. 192-12.00a.

Anderson, Lawrence; and Bentzen, Bruce D., to Medical Incorporated. Collet for holding heart valve. 3,828,787, Cl. 128-303.00r.

Anderson Mavor Limited: *See*—
Anderson, Forrest Symington, 3,828,900.

Anderson, Niels Lervad; and Hubschmann, Ejvind, to Danfoss A/S. Ignition device for burner installations. 3,829,739, Cl. 317-98.000.

Anderson, Ralph; and Beyer, Rodney B., to Future Systems, Inc. Process for treating waste photographic processing solution and recovering residual silver therefrom as a silver halide. 3,829,549, Cl. 423-43.000.

Andrychuk, Dmetro, to Texas Instruments Incorporated. Image conversion and amplifying device. 3,829,692, Cl. 250-330.000.

Annettoni, Ezio, to Chemetron Corporation, mesne. Dual action microswitch actuator. 3,829,644, Cl. 200-153.00t.

Anspach, William E., Jr. Holder for X-ray cassettes. 3,829,699, Cl. 250-475.000.

Anzai, Masao; and Miyatake, Masayuki, to Toppan Printing Co. Ltd. and Toyo Ink Manufacturing Co., Ltd. Sublimation transfer dyeing with 4,8-dihydroxy-1-arylamino-anthraquinones. 3,829,286, Cl. 8-2.500.

Aoki, Masayoshi: *See*—
Nozawa, Hideo; Aoki, Masayoshi; and Isono, Shoji, 3,828,549.

Aoshika, Masayuki: *See*—
Nanjyo, Toshio; Aoshika, Masayuki; and Nakamura, Akinori, 3,829,595.

Aoshima, Kazuyohi: *See*—
Kato, Mitsukuni; Komai, Takeshi; and Aoshima, Kazuyohi, 3,829,503.

Aoyama, Akimitsu, to Matsushita Electric Industrial Company Limited. Character generation cathode-ray tube using tantalum target. 3,829,727, Cl. 313-399.000.

Aoyama, Yahyo, to Miyata Kinzoku Kogyo Kabushiki Kaisha. Calk for golf shoes. 3,828,364, Cl. 2-67.00b.

Apicella, Anthony. Simultaneous embossing and printing. 3,828,666, Cl. 101-24.000.

Apple, Charles N., Sr., to Metafab Industries, Inc. Tube joining system. 3,828,414, Cl. 29-200.00b.

Appleton Electric Company: *See*—
Rutkowski, John L., 3,829,815.

Aquarius, Conrardus Hubertus. Apparatus for forming lollipops. 3,829,262, Cl. 425-126.00s.

Arai, Michio, to Sony Corporation. Variable resistance field effect transistor. 3,829,882, Cl. 357-23.000.

Araki, Toru; and Yamamoto, Shigeo, to National Research Institute for Metals. Process for the manufacture of steel of good machinability. 3,829,312, Cl. 75-129.000.

ARCO Nuclear Company, mesne: *See*—
Purdy, David L., 3,828,371.

Ardal & Sunndal Verk A/S: *See*—
Brautaset, Steinar; and Otterbeck, Finn, 3,829,050.

Argereu, William. Sound deadening means for use on a bar feeding and a bar working machine. 3,828,630, Cl. 82-2.500.

Arkin, Theodore E. Set of golf clubs and means for carrying same. 3,829,092, Cl. 273-77.00a.

Armel, Jack, to Iso Nuclear Corp., mesne. Self-packaged hypodermic syringe. 3,828,775, Cl. 128-218.00n.

Armstrong Cork Company: *See*—
Lewicki, Walter J., Jr., 3,828,725.

Armstrong, Robert G. Apparatus for inductively heating tubular metal workpieces. 3,829,650, Cl. 219-10.690.

Arnold, Dan M.: *See*—
Schultz, Ward E.; Smith, Harry D., Jr.; and Arnold, Dan M., 3,829,686.

Arnold, Harmon W.: *See*—
Platt, Thomas W.; and Arnold, Harmon W., 3,829,048.

Aroyo, Jacky Sivcho: *See*—
Julev, Stoyan Iliev; Milkov, Mihail Yordanov; Dachev, Lyubomir Petrov; Vasilev, Rosen Petrov; Kostov, Vasil Alexandrov; and Aroyo, Jacky Sivcho, 3,829,344.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Ishida, Shinichi; Oshima, Noboru; Kurita, Kunio; Suzuki, Isamu; and Ohno, Hidetoshi, 3,829,379.

Asahi Kasei Kogyo K.K.: *See*—
Miyasaki, Norihiko; Ishii, Minoru; Sakurai, Hiroji; Suzuki, Hisao; Nagatsumo, Katsuyoshi; and Furukawa, Hitoshi (said Sakurai assor. to), 3,829,228.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kamasako, Shoji, 3,829,865.
Kawasaki, Harumi, 3,829,832.
Takahashi, Yasuo, 3,829,198.
Uno, Naoyuki; and Urano, Fumio, 3,829,876.

Asahi Optical Co.: *See*—
Nobusawa, Tsukumo, 3,829,866.

Asano, Masafumi: *See*—
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 3,829,555.

Ascencio, Ramon J., to Douglas & Lomason Company. Mechanical attachment of thermoplastic material to a base sheet. 3,829,355, Cl. 161-114.000.

Asfura, Abraham C. Miselem. Process for handling fluids in heat transfer equipment. 3,828,843, Cl. 165-1.000.

Ashby, Eugene C.; Taylor, William D.; and Winkler, Donald A., to Ethyl Corporation. Aluminum hydride product. 3,829,390, Cl. 252-188.000.

Ashida, Hitoshi, to Takeda Riken Industry Company Limited. Frequency measuring apparatus. 3,829,769, Cl. 324-79.00d.

Ashland Oil Inc.: *See*—
McKillip, William J.; and Culbertson, Billy M., 3,829,407.

Aslund, Nils Robert Dahr, to Saab-Scania Aktiebolag. Device to introduce an optic measuring index at photoelectric detection of photographic plates. 3,829,222, Cl. 356-203.000.

Aspinwall, Peter, to Comstock & Wescott, Inc. Reversibly mountable book cutter. 3,828,409, Cl. 29-105.00a.

Associated Engineering Limited: *See*—
Hunt, Norman, 3,828,818.

Assouline, Georges; Hareng, Michel; and Leiba, Eugene, to Thomson-CSF. Liquid crystal image converter system responsive to ionizing radiation. 3,829,684, Cl. 250-213.00r.

Ateliers de Constructions Electriques de Charleroi (ACEC) Societe Anonyme: *See*—
Schirman, Ananie, 3,829,736.

Athey, Stuart E., to Hobart Manufacturing Company, The. Mounting for printed circuit boards. 3,829,741, Cl. 317-101.0dh.

Atkin, Robert F., to Pyrocom, Inc. Incinerator. 3,828,701, Cl. 110-8.00a.

Atkins, Herbert Ashley, to Beecham Group Limited. Bottle closure. 3,828,962, Cl. 215-41.000.

Atkinson, Arthur Gordon: *See*—
Allan, William Bell; Rattle, Jeffrey Douglas; and Atkinson, Arthur Gordon, 3,829,857.

Atre, John D.: *See*—
Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and Atre, John D., 3,829,786.

Audesse, Emery G.: *See*—
Westlund, Arnold E., Jr.; Palmer, Lewis H., III; Audesse, Emery G.; and Huston, Leroy S., 3,829,729.

Auh, Chung M.: *See*—
Malcosky, Norman D.; McLean, Ronald H.; Singh, Kanwal N.; and Auh, Chung M., 3,828,575.

Automated Building Components, Inc.: *See*—
Jureit, John Calvin, 3,828,514.

Automobiles Peugeot: *See*—
Chevret, Remy, 3,829,184.
Lecailtel, Pierre; and Dresser, Bruno, 3,828,649.

Miokovic, Stevan, 3,829,176.
Roger, Yves, 3,828,628.
Avco Corporation: *See—*
Hohenberg, Rudolph; and Duly, Alan R., 3,829,666.
A.V.I. Alpenlanische Veredelungs-Industrie Gesellschaft m.b.H.: *See—*
Boyer, Wilhelm; Ritter, Josef; and Ritter, Gerhard, 3,828,416.
Baba, Keizi: *See—*
Naitou, Nobuyosi; Baba, Keizi; Huziwara, Sigehisa; and Yamanaka, Takesi, 3,828,904.
Baba, Mikito: *See—*
Miyata, Takeo; Hamada, Seiya; Inoue, Katsuaki; and Baba, Mikito, 3,829,799.
Babcock & Wilcox Company, The: *See—*
Jabsen, Felix S., 3,828,868.
Silk, Edmond J.; and Moore, Claude A., 3,828,518.
Babcock & Wilcox Limited: *See—*
Cox, Eric Reginald; and Wall, John Shiel Clements, 3,828,915.
Kron, Heinz; and Grommes, Helmut, 3,829,031.
Babich, Edward: *See—*
Offutt, Elmer Bradley; and Babich, Edward, 3,828,971.
Bachofner, Peter: *See—*
Chaudhuri, Kiranendu; and Bachofner, Peter, 3,829,365.
Backscheider, Nickolas A. Bulk film loading device. 3,829,035, Cl. 242-71.700.
Bader, Henry; and January, Susan C., to Polaroid Corporation. Synthesis of 3-(3'-carboxy-4'-hydroxy-1'-naphtyl) -3-(3'-carboxy-4'-hydroxy-1'-naphthyl) naphthalide. 3,829,443, Cl. 260-343.20r.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Keppler, Hans-Georg; Zuern, Ludwig; and Stahnecker, Erhard, 3,829,378.
Mueller, Albrecht; Zeeh, Bernd; and Kiefer, Hans, 3,829,482.
Baechle, Charles H. Power tool accessory. 3,828,484, Cl. 51-170.0eb.
Baer, Ralph H.: *See—*
Goldfarb, Adolph E.; Everitt, Delmar K.; Chesley, Ronald F.; and Baer, Ralph H., 3,829,094.
Baer, Ralph H., to Sanders Associates, Inc. Method of employing a television receiver for active participation in a simulated shooting game. 3,829,095, Cl. 273-101.100.
Bagdad Plastics Company: *See—*
Dayne, Eddy K.; and Land, Wilbur G., 3,829,061.
Bagprint Ltd.: *See—*
Kleinhaut, Samuel, 3,829,002.
Bagprint Lts.: *See—*
Kleinhaut, Samuel, 3,829,001.
Bagwell, Thomas W.: *See—*
James, Russell P., 3,828,443.
Baichtal, James R., to Vidar Corporation. Tape speed monitor. 3,829,893, Cl. 360-73.000.
Baker, Cecil J.; and Beckett, Leo G., to Whirlpool Corporation. Apparatus for freezing ice bodies. 3,829,056, Cl. 249-121.000.
Baker, Don R., to Stauffer Chemical Company. Biocidal active carbamyl hydrazones. 3,829,486, Cl. 260-554.000.
Baker, Donald O., to Linear Devices Inc. Geological movement detectors. 3,828,435, Cl. 33-1.00h.
Baker Perkins Limited: *See—*
Shaw, James Thomas; and Lilley, Raymond Percy Arthur, 3,828,482.
Bakken, Petter Magnar, to Elektronikklaboratoriet ved NTH. Electronical amplitude modulator, in particular for modulating signals intended for navigation purposes. 3,829,796, Cl. 332-44.000.
Balamuth, Lewis: *See—*
Kuris, Arthur; Balamuth, Lewis; and Karatjas, Manuel, 3,828,770.
Balayan, Ruben Dzhangirovich: *See—*
Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich; Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich, 3,829,042.
Baldocchi, Archie. Holster for pistols. 3,828,990, Cl. 224-2.00c.
Balko, Jack E.; Moffatt, Davis F.; and Searcy, Durward F., to Specialty Instruments Corporation. Photo finish record system. 3,829,869, Cl. 95-1.100.
Ballast-Nedam Groep N.V.: *See—*
De Koning, Jan; Van Der Veen, Romke; and Wolters, Tjako Aaldrik, 3,828,451.
Balzers Patent- und Beteiligungs-Aktiengesellschaft: *See—*
Thelen Alfred, 3,829,197.
Banks, Michael E.; Lusk, Walter D.; and Ottinger, Robert S., to United States of America, Health, Education and Welfare. Disposal of waste plastic and recovery of valuable products therefrom. 3,829,558, Cl. 423-481.000.
Barnebey, Herbert L., to Barnebey-Cheney Co. Fluid flow control valves. 3,828,816, Cl. 137-625.280.
Barnebey-Cheney Co.: *See—*
Barnebey, Herbert L., 3,828,816.
Barnes Engineering Company: *See—*
Schwarz, Frank, 3,829,693.
Barrett, Harrison H., to Raytheon Company. High intensity radiation. 3,829,688, Cl. 250-272.000.
Barrillon, Claude Gerbelot: *See—*
Berthoux, Jean; and Barrillon, Claude Gerbelot, 3,829,451.
Barry, Adelbert; and Heintz, Karl O., to Esso Production Research Company. Coupling assembly. 3,829,816, Cl. 339-16.00r.
Barry, Richard H.; Matluck, Meyer; and Orshitzer, Philip, to Hoffmann-La Roche Inc. Emollient cleansing compositions. 3,829,563, Cl. 424-70.000.
Bartmann, Wilhelm; and Alpermann, Hans-Georg, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Analgesic composition. 3,829,571, Cl. 424-250.000.
Bartmann, Wilhelm; Alpermann, Hans-Georg; and Jochum, Christian, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Analgesic composition. 3,829,572, Cl. 424-250.000.
Barton, Lloyd: *See—*
Rothstein, Milton; Kaplan, Martin; and Barton, Lloyd, 3,829,341.
Basf Wyandotte: *See—*
Schmolka, Irving R.; and Seizinger, Reinhold K., 3,829,506.
BASF Wyandotte Corporation: *See—*
Horn, Peter; and Schuster, Ludwig, 3,829,458.
Wegst, Walter F.; and Aepli, Otto T., 3,829,386.
Basov, Jury Georgievich: *See—*
Sysun, Viktor Viktorovich; Basov, Jury Georgievich; and Roldugin, Vladimir Ivanovich, 3,829,732.
Bastide, Paul. Safety apparatus for a vehicle. 3,829,122, Cl. 280-150.00b.
Bate, Robert Thomas. Magnetic field detector employing plural drain inlet. 3,829,883, Cl. 357-23.000.
Bates Packaging Services, Inc., mesne: *See—*
Mueller, Martin; and Wingo, Mason C., 3,828,660.
Batrukova, Maria Grigorievna: *See—*
Krasnov, Mikhail Mikhailovich; Stelmakh, Mitrofan Fedorovich; Malyshev, Boris Nikolaevich; Prozorov, Vladimir Nikolaevich; Saprykin, Pavel Ivanovich; and Batrukova, Maria Grigorievna, 3,828,788.
Battelle Development Corporation: *See—*
Lewis, Jordan D.; Verber, Carl M.; and McGhee, Robert B., 3,829,838.
Bauer Corporation: *See—*
Rehm, Roger P., 3,828,889.
Bauerle, John F. Omni angle rotary table. 3,828,727, Cl. 118-500.000.
Bausch & Lomb Incorporated: *See—*
Blum, Raymond T.; and Laughman, George J., 3,828,483.
Van Exel, Gerrit A.; and Akin, Alfred A., Jr, 3,829,194.
Bayer Aktiengesellschaft: *See—*
Beck, Gunther; and Holtschmidt, Hans, 3,829,435.
Buttner, Gerhard; and Klauke, Erich, 3,829,460.
Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, 3,829,565.
Raue, Roderich; and Dorsch, Hans-Lothar, 3,829,418.
Raue, Roderich; Kruckenberg, Winfried; and Rohe, Ernst-Heinrich, 3,829,461.
Staffe, Adolf; and Gerlach, Klaus, 3,829,466.
Wunderlich, Klaus; and Bien, Hans-Samuel, 3,829,452.
Zumach, Gerhard; Kuhle, Engelbert; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,829,437.
Bayer, Horst O.; and Weiler, Ernest D., to Rohm & Haas Company. Fungicidal dithiomalonamides and their congeners. 3,828,580, Cl. 424-320.000.
Bayer, Horst O.; and Weiler, Ernest D., to Rohm & Haas Company. Fungicidal dithiomalonamides and their congeners. 3,829,580, Cl. 424-320.000.
Baynes, Gene P., to General Motors Corporation. Combination apex and corner seal spring for rotary engine. 3,829,259, Cl. 418-121.000.
Beale, William T., to Research Corporation. Means and method for prevention of piston creep in free-piston reciprocating device. 3,828,558, Cl. 60-520.000.
Beam, Jon W. Tobacco smoking equipment. 3,828,799, Cl. 131-195.000.
Beasley, Jack O., to Buehler Corporation, The. Cooling arrangement for a direct current power supply. 3,829,740, Cl. 317-100.000.
Beattie, Willard H.: *See—*
Jensen, Reed J.; Rice, Walter W.; and Beattie, Willard H., 3,829,793.
Beaver, Commodore E. Lock assembly. 3,828,591, Cl. 70-56.000.
Beavitt, Alan Robert, to Plessey Handel und Investments A.G. Electrical connection devices. 3,829,817, Cl. 339-17.00f.
Becht, Carl T.: *See—*
Biddle, Franklin Keith; and Becht, Carl T., 3,828,656.
Bechtold, Johann, to Maschinenfabrik Moenus Aktiengesellschaft. Machine for treating lasted uppers. 3,828,384, Cl. 12-1.00a.
Beck, Gunther; and Holtschmidt, Hans, to Bayer Aktiengesellschaft. 2,5-Dichlorothiazolothiazole and process for preparing same. 3,829,435, Cl. 260-306.80f.
Beck, Joseph J., to McQuay-Perfex, Inc. Recuperators for incinerators. 3,829,285, Cl. 432-223.000.
Becker, Roger T.; Hatter, Stephen L.; and McMullin, Donald, Jr., to Kalamazoo Conveyor Company. Harpoon conveyor. 3,828,920, Cl. 198-221.000.
Beckett, Leo G.: *See—*
Baker, Cecil J.; and Beckett, Leo G., 3,829 056.
Becknell, William R. Vehicular retractable cover. 3,829,154, Cl. 296-98.000.
Beckwith Corporation: *See—*
Closson, Addison W.; and Beckwith, Harry L., 3,829,351.
Beckwith, Harry L.: *See—*
Closson, Addison W.; and Beckwith, Harry L., 3,829,351.
Beecham Group Limited: *See—*
Atkins, Herbert Ashley, 3,828,962.

Billett, Eric Harold; and Miller, David, 3,829,474.

Behrenz, Wolfgang: *See—*
Zumach, Gerhard; Kuhle, Engelbert; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,829,437.

Belinkoff, Irving R.: *See—*
Farber, Milton H.; and Belinkoff, Irving R., 3,828,760.

Bell Telephone Laboratories, Incorporated: *See—*
Cichetti, Michael Peter, Jr.; and Fretz, Jeffrey, 3,829,843.
Dembiak, Matthew R.; and Webster, George H. (said Webster assor. to), 3,829,340.
Logan, Ralph Andre; and Thurmond, Carl Dryer, 3,829,556.
Rawson, Eric Gordon, 3,829,195.

Beloit Corporation: *See—*
Brenner, Lawrence A.; and Scholl, Charles H., 3,828,523.
Melead, James J., 3,829,274.

Belonozhko, Alla Mikhailovna: *See—*
Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.

Belyaev, Igor Alexandrovich. Trolley wire suspension for use in overhead contact wire system of electric transport. 3,829,630, Cl. 191-41.000.

Belyaev, Viktor Borisovich; Butrova, Ekaterina Sergeevna; Kiselev, Jury Vladimirovich; and Pozharskaya, Galina Tikohnovna. Spark gap. 3,829,733, Cl. 313-205.000.

Bemis, Edwin G. Fluid-jet-abrasive device and system. 3,828,478, Cl. 51-11.000.

Bender, Donald A.: *See—*
Evers, James D., deceased, 3,828,810.

Bender, Louis. Pill dispenser with cartridge and pill advanced indicator. 3,828,972, Cl. 221-197.000.

Bender, Louisa E.: *See—*
Evers, James D., deceased, 3,828,810.

Bendix Corporation, The: *See—*
Alyanak, Edward J., 3,829,218.
Centner, Ronald M.; and Velek, Robert J., 3,829,750.
Ludwig, George, 3,828,743.
Sanford, Norman Ray; Wainscott, Alan Dale; and Skelton, Billy Keith, 3,828,477.
Stauffer, Reuben L., 3,829,849.

Benerito, Ruth R.: *See—*
Berni, Ralph J.; Benerito, Ruth R.; and Soignet, Donald M., 3,829,290.

Beneteau, Donald J. Back-up locking cylinder. 3,828,652, Cl. 91-445.000.

Benker, Horst Wilheim: *See—*
Hubner, Oswald; and Benker, Horst Wilheim, 3,829,820.

Benson, Ernest J.: *See—*
Tull, Alonzo E.; Benson, Ernest J.; and Weiveris, William V., 3,828,914.

Benson, William. Hovercraft secondary lift system. 3,829,043, Cl. 244-12.00r.

Bentley, Ralph L. Sign and support apparatus. 3,828,455, Cl. 40-125.00h.

Bentul Equipment Corporation: *See—*
Tull, Alonzo E.; Benson, Ernest J.; and Weiveris, William V., 3,828,914.

Bentzen, Bruce D.: *See—*
Anderson, Lawrence; and Bentzen, Bruce D., 3,828,787.

Benz, Hans, to Brown Boveri-Sulzer Turbomachinery Ltd. Mounting for a stator blade adjusting cylinder on an axial compressor. 3,829,234, Cl. 415-138.000.

Berckmans, Walter: *See—*
Pietermaat, Francois Paul; Peytier, Andre; and Berckmans, Walter, 3,829,608.

Berg, Robert Orval; and Thurber, Kenneth James, to Honeywell Inc. Multi-function logic module employing read-only associative memory arrays. 3,829,846, Cl. 340-173.0am.

Berger, Abe: *See—*
Wilkus, Edward V.; and Berger, Abe, 3,829,455.

Berger, Joel G.; and Teller, Sonia R., to Endo Laboratories, Inc., mesne. Process for the preparation of certain indolobenzazepine derivatives. 3,829,431, Cl. 260-294.80a.

Berger, Julius; and Rosenberger, Michael, to Hoffman-La Roche Inc. (-)-9-Oxo-5(s)-hydroxy-decanoic acid lactone. 3,829,447, Cl. 260-343.500.

Berger, Samuel. Self-adjustable shirt collar. 3,828,365, Cl. 2-128.000.

Bergkvist, Bengt, to U.S. Philips Corporation. Arrangement in a radar equipment for indicating a variable threshold level on the indicator. 3,829,858, Cl. 343-7.00a.

Bergman, Carl: *See—*
Larsson, Hans-Gunnar; and Bergman, Carl, 3,829,261.

Beringer Hydraulik R. Beringer & Co.: *See—*
Haussler, Hubert, 3,828,813.

Berkestad, Karl Erik: *See—*
Bryntse, Anders Ivar; and Berkestad, Karl Erik, 3,828,650.

Berlock, Monty David; and Dobrowolski, Tadeusz, to Plessey Handel und Investments A.G. Airfield lighting circuit arrangements. 3,829,735, Cl. 315-131.000.

Berman, Harold, to Morton-Norwich Products, Inc. Method for making τ-butyl 2,4,5-trichloro phenyl carbonate. 3,829,456, Cl. 260-463.000.

Bernard, Henry W. Golf ball sphericity gauge. 3,828,442, Cl. 33-178.00b.

Bernardi Bros., Inc.: *See—*
Bernardi, Robert P., 3,828,716.

Bernardi, Robert P., to Bernardi Bros., Inc. Mooring device. 3,828,716, Cl. 114-221.00r.

Bernath, John. Jacketed bullet. 3,828,678, Cl. 102-92.000.

Bernheim, Willy: *See—*
Deiner, Hans; Hofstetter, Hans; and Bernheim, Willy, 3,829,288.

Berni, Ralph J.; Benerito, Ruth R.; and Soignet, Donald M., to United States of America, Agriculture. Reaction of sodium cellulosate with mono- and difunctional epoxides in non-aqueous media. 3,829,290, Cl. 8-120.000.

Berry, Chapman: *See—*
Hackenbert, Robert A.; Tyrseck, Walter J.; and Berry, Chapman, 3,829,005.

Berry, George R., to Berry, Inc. Tank for bulk transport and storage of semisolid materials. 3,828,988, Cl. 222-389.000.

Berry, Inc.: *See—*
Berry, George R., 3,828,988.

Berthoux, Jean; and Barrillon, Claude Gerbelot, to Progil. Process for producing trimellitic anhydride. 3,829,451, Cl. 260-346.400.

Bertin & Cie: *See—*
Boy-Marcotte, Jean Louis; Simmonnet, Jacques Louis Paul; Marchal, Philippe Albert Hippolyte; and Verrien, Jean Prudent Fernand Rene, 3,828,574.

Bertram, James L.; Whiteside, Ross C., Jr.; and Franke, Preston H., Jr., to Dow Chemical Company, The. Hydrogen sulfide-modified epoxy resins and flexible laminates therefrom. 3,829,354, Cl. 161-88.000.

Best, Freddie W.: *See—*
Neumann, Calvin L.; and Best, Freddie W., 3,828,797.

Bestenreiner, Friedrich: *See—*
Meeussen, Louis Achilles; Bestenreiner, Friedrich; and Huber, Hans-Peter, 3,829,610.

Bethlehem Steel Corporation: *See—*
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Heselwood, James C., 3,828,437.

Bettoli, Phillip Stephen, to GAF Corporation. Siding assembly structure. 3,828,510, Cl. 52-548.000.

Betz Laboratories, Inc.: *See—*
Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,829,305.
Lange, K. Robert; Stern, Arthur M.; Gasner, Lawrence L.; and Hsu, Yuan Tsun, 3,829,388.
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,829,424.
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Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,829,586.

Betzoldt, Louis F., to Neibauer, Lance A. Puzzle assembly with intersecting peices. 3,829,101, Cl. 273-160.000.

Beyer, Rodney B.: *See—*
Anderson, Ralph; and Beyer, Rodney B., 3,829,549.

Beyers, Billy Wesley, Jr., to RCA Corporation. Video disc playback eddy current speed control system. 3,829,612, Cl. 178-6.60a.

Bianchi, Massimo; and Conti, Gianni, to Billi S.p.A. Sinker cap with access slot. 3,828,584, Cl. 66-107.000.

Biddle, Franklin Keith; and Becht, Carl T., to Senco Products Inc. Annular piston stop structure. 3,828,656, Cl. 92-85.000.

Bien, Hans-Samuel: *See—*
Wunderlich, Klaus; and Bien, Hans-Samuel, 3,829,452.

Billett, Eric Harold; and Miller, David, to Beecham Group Limited. 5,5-Diphenylpent-4-enoic acids and related compounds. 3,829,474, Cl. 260-515.00r.

Billi S.p.A.: *See—*
Bianchi, Massimo; and Conti, Gianni, 3,828,584.

Bird, Stanford W., to Plastronics Corporation. Carton carrier. 3,829,143, Cl. 294-31.200.

Birnbaum, Milton, to Aerospace Corporation, The. Atmospheric NO2 monitor. 3,829,696, Cl. 250-365.000.

Biron, Raymond Joseph: *See—*
Peckinpaugh, Frank Lee; Stables, Wilbur Leon; and Biron, Raymond Joseph, 3,828,404.

Birrell, Peter Leslie, to Cornelius Company, The. Method of and means for dispensing. 3,828,973, Cl. 222-1.000.

Bisarya, Satish C.: *See—*
Green, Michael J.; and Bisarya, Satish C., 3,829,416.

Biskup, Edward J., to General Motors Corporation. Steering mechanism for articulated vehicle. 3,828,882, Cl. 180-79.20b.

Bixier, Antonio. Internal combustion engine. 3,828,741, Cl. 123-58.0ab.

Bizerba-Werke Wilhelm Kraut KG: *See—*
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Black and Decker Manufacturing Company: *See—*
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Black, Sivalls & Bryson, Inc.: *See—*
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Blais, Pierre J.,B.; Carlsson, David J.; and Wiles, David M., to Canadian Patents and Development Limited. Bonding condensation polymers to polymeric base materials. 3,829,324, Cl. 117-47.00a.

Blake, Ivan C.; and Cercone, Ronald, to Yardney International Corporation. Novel process for preparation of silver chloride powder. 3,829,539, Cl. 264-13.000.

Bleicher, Manfred; Falchle, Jorg; Hahner, Reinhard; Hansel, Gernot; Schmid, Wolfgang; and Wanner, Karl, to Bosch, Robert, GmbH. Combined portable electric impact wrench and chipping hammer. 3,828,863, Cl. 173-48.000.

Blewitt, Donald D.; Cameron, Frank L.; and Vondracek, Charles H., to Westinghouse Electric Corporation. Fuse housing construction utilizing extruded terminals and process for making same. 3,829,808, Cl. 337-106.000.

Bliss, George D.: *See—*
Hill, Robert; Bliss, George D.; and Szakacs, Janos B., 3,828,732.

Blouch, Roger D., to International Mobile Machines Corporation. Ringer blocking attachment for telephones. 3,829,616, Cl. 179-2.00a.

Blum, Raymond T.; and Laughman, George J., to Bausch & Lomb Incorporated. Optical lens generating machine having spherical bearing workpiece holder. 3,828,483, Cl. 51-124.001.

Blumcraft of Pittsburgh: *See—*
Horgan, William J. Jr., 3,828,394.
Horgan, William J., Jr., 3,828,592.

Blustain, Stanley, to Stam Instruments Corp. Method for cleaning resilient webs. 3,829,328, Cl. 134-1.000.

Boaz, Edward G. Self-energizing and self-aligning double-acting brake assembly. 3,828,895, Cl. 188-77.00r.

Bobard, Emile. Tractor-set resulting from the coupling of a tractor to a straddle tractor, able to be driven by a single driver. 3,828,871, Cl. 180-1.00f.

Bock, Walter R., to Qonaar Corporation. Deferred time meter. 3,828,907, Cl. 194-72.000.

Boeck, David J., to FMC Corporation. Snow caster deflector cap locking device. 3,828,450, Cl. 37-43.00r.

Boehringer, C. H., Sohn: *See—*
Heider, Joachim; Enberlein, Wolfgang; and Engelhardt, Gunther, 3,829,570.

Boehringer Ingelheim GmbH: *See—*
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Stearns, Gabriel E., 3,829,020.
Woter, Allan Roy, 3,828,606.

Boekkooi, Anton, to U.S. Philips Corporation. Method of manufacturing electric lamps. 3,828,407, Cl. 29-25.110.

Bognaes, Ragnar; and Solberg, Olav, to Kvaerner Brug AS. LNG cargo tank insulation system. 3,828,709, Cl. 114-74.00a.

Boie, Immo: *See—*
Krimm, Heinrich; Freitag, Dieter; and Boie, Immo, 3,829,462.

Bolger, Joseph. Swivel locking caster brake. 3,828,392, Cl. 16-35.00r.

Bolton, Robert Benjamin. Anti-theft device for vehicles. 3,828,593, Cl. 70-209.000.

Bommarito, Dominic M. Shock absorbing mounting for motor vehicle. 3,829,142, Cl. 293-86.000.

Bonafino, Edward J.; Gilbert, Richard L.; and Mako, John, to International Business Machines Corporation. Print line registration indicator. 3,828,669, Cl. 101-111.000.

Bonke, Henry A. Sharpening device. 3,828,486, Cl. 51-249.000.

Bonney, John L. V., Jr., to Perma-Blade, Inc. Method and apparatus for producing windshield wiper blades. 3,828,638, Cl. 83-356.100.

Bonnot Co., The: *See—*
Schweizer, William P., Jr., 3,829,594.

Bonnot, Pierre Edmond Michel. Polyvalent pliable container. 3,828,964, Cl. 220-1.500.

Booher, Harold R.: *See—*
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Boon, Bruce Theodore Edward, to Eastern Cyclone Industries, Inc. Anti-stoppage apparatus and method for air conveying systems. 3,829,165, Cl. 302-59.000.

Booth, Franklin W.; and Bruce, Robert A., to United States of America, National Aeronautics and Space Administration. Centrifugal lyophobic separator. 3,828,524, Cl. 55-43.000.

Boothroy, George: *See—*
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Borchert, Jerome A., to Continental Can Company, Inc. Compartment bag assembly for dispensing containers. 3,828,977, Cl. 222-95.000.

Borden, Inc., mesne: *See—*
Kirch, John N., 3,829,323.

Borel, Joseph; Lacour, Jacques; and Merckel, Gerard, to Commissariat a L'Energil Atomique. Charge-coupled device and method of fabrication of the device. 3,829,884, Cl. 357-24.000.

Borg, Henry A. Vehicle test fixture. 3,828,614, Cl. 74-16.000.

Borg-Warner Corporation: *See—*
Duzey, Ozbek, 3,828,762.
Fogelberg, Mark J., 3,828,877.
Heathwaite, Hewart H.; and Mead, Robert H., 3,828,620.
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Born, Gunthard; Erben, Klaus-Dieter; and Mohr, Friedbert, to Messerschmitt-Bolkow-Blohm Gesellschalt mit beschrankter Haftung. Method for the increase of output of gas lasers and apparatus for carrying out the method. 3,829,792, Cl. 331-94.5pe.

Borovansky, Alois: *See—*
Jelinek, Vaclav, deceased; Semonsky, Miroslav; Hartl, Jiri; and Borovansky, Alois, 3,829,473.

Borse, Dietrich; Lockemann, Albert; and Cordsen, Gerd, to Ernst Winter & Sohn. Apparatus for applying solid lubricant to the material working face of a tool. 3,828,646, Cl. 90-11.00r.

Bosch, Robert, GmbH: *See—*
Bleicher, Manfred; Falchle, Jorg; Hahner, Reinhard; Hansel, Gernot; Schmid, Wolfgang; and Wanner, Karl, 3,828,863.
Elwert, Dietmar; and Gaege, Gotz, 3,829,635.
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Bosch, Robert, Photokino GmbH: *See—*
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Bosco, Charles D.: *See—*
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Bosisio, Renato Guiseppe. Method and apparatus for measuring physical and/or chemical properties of materials. 3,829,764, Cl. 324-58.00r.

Botnick, Irlin H. Fixture shutoff valve with drain. 3,828,815, Cl. 137-625.260.

Bottone, Salvatore, Jr., to General Electric Company. Apparatus for controlling variation in a characteristic of strand-like material. 3,829,751, Cl. 318-645.000.

Bouillard, Henry: *See—*
Bouillard, Rene; and Bouillard, Henry, 3,829,023.

Bouillard, Rene; and Bouillard, Henry. Atomizing device. 3,829,023, Cl. 239-318.000.

Bourat, Guy, to Rhode-Poulenc S.A. Method for forced flow electrophoresis. 3,829,370, Cl. 204-180.00p.

Bourgeois, Alain, to Elastelle Paul Fontanille & Fils. Method of an installation for continuous manufacture of unsewn articles of clothing. 3,828,367, Cl. 2-224.00a.

Bournazel, Jacques, to Societe Pour l'Industrialisation du Material "Indumat". Tripod supporting a framing table for concrete works. 3,829,053, Cl. 248-354.00s.

Bouton, Frank M., Jr.; and Prints, Thomas R., to Floating Poing Systems, Inc. Floating point arithmetic unit adopted for converting a computer to floating point arithmetic. 3,829,673, Cl. 235-164.000.

Boutonnet, Alexandre; Clavelet, Georges; and Morieras, Gilbert, to Societe Rhodiaceta. Effect yarns and process for producing the same. 3,828,542, Cl. 57-140.0by.

Bowen, Dennis Herbert, to United Kingdom Atomic Energy Authority. Armour. 3,828,699, Cl. 109-80.000.

Bowling, Joseph E., Jr.: *See—*
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Bowman, David N., 1/2 interest to Bowman, Morris L. Rice farming implement. 3,828,702, Cl. 111-52.000.

Bowman, Morris L.: *See—*
Bowman, David N., 3,828,702.

Boy-Marcotte, Jean Louis; Simmonnet, Jacques Louis Paul; Marchal, Philippe Albert Hippolyte; and Verrien, Jean Prudent Fernand Rene, to Bertin & Cie and Entreprise de Recherches et d'Activites Petrolieres Elf. Rotary-injector type distributor. 3,828,574, C. 62-467.000.

Boyer, Wilhelm; Ritter, Josef; and Ritter, Gerhard, to A.V.I. Alpenlanische Veredelungs-Industrie Gesellschaft m.b.H. Method of reinforcing concrete. 3,828,416, Cl. 29-417.000.

Bozanic, Donald A.; Mergerian, Dickron; Minarik, Ronald W.; and Pincoffs, Peter H., to Westinghouse Electric Corporation. Spin echo frequency hopping. 3,829,760, Cl. 324-.50r.

Bozek, Edmund J. Jr.: *See—*
Wise, Louis M.; and Bozek, Edmund J. Jr., 3,829,387.

Bradburn, Eugene H.; and Tidwell, James T., to United States of America, Atomic Energy Commission. Brazing alloy. 3,829,313, Cl. 75-146.000.

Bradbury, Bernard G., to Rexnord Inc. Dynamic stop. 3,828,688, Cl. 104-252.000.

Bradley, Curtis E. Safety wheel and tire securing assembly. 3,828,836, Cl. 152-158.000.

Braen, H. Peter; and Hafner, Raymond A., to Mohawk Data Sciences Corporation. Fan-folded paper stacker for high speed printer. 3,829,080, Cl. 270-61.00f.

Brand, Arnold J.; and Sacks, Sidney M., to Singer Company, The. Octant determination system for an analog to digital converter. 3,829,854, Cl. 340-347.0ad.

Brandon, Arthur Cecil, to American Telephone and Telegraph Company. Line usage measuring circuit. 3,829,618, Cl. 179-8.00a.

Bratland, Arthur O. Membrane substance concentrates. 3,829,592, Cl. 426-491.000.

Braum, W., Company, mesne: *See—*

Lerner, Nathan B., 3,828,959.

Brautaset, Steinar; and Otterbeck, Finn, to Ardal & Sunndal Verk A/S. Suspension means for awning housing. 3,829,050, Cl. 248-223.000.

Brejner, Gunnar. Pressure maintaining for a liquid heating plant. 3,829,012, Cl. 237-8.00r.

Brenner, Lawrence A.; and Scholl, Charles H., to Beloit Corporation. Automatic inside head holder structure. 3,828,523, Cl. 53-380.000.

Brico Engineering Limited: *See—*
Farmer, Edwin Bruce; and Cadle, Terence Michael, 3,829,295.

Bridgestone Liquefied Gas Company, Ltd.: *See—*
Yamamoto, Katsuro, 3,828,608.

Briggs, Eugene C.; and Wellbaum, William C., to Koehring Corporation. Burner module for application to an air intake manifold or other gas flow conduit. 3,829,281, Cl. 432-63.000.

Briggs, Walton E.; and Maliakal, Joseph C., to Varian Associates. Leak detection apparatus and inlet interface. 3,828,527, Cl. 55-158.000.

Bright, Hugh H.; Davis, Lee W.; and Tanaszek, Frank J., to Little Giant Corporation. Utility pump. 3,829,248, Cl. 417-410.000.

Brink, Robert H., Jr.: *See—*
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,829,424.
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,829,575.
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,829,586.

Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, to Betz Laboratories, Inc. Slime control compositions containing phenolic compounds and their use. 3,829,305, Cl. 71-67.000.

British Domestic Appliances Limited: *See—*
Sutton, Michael Gilbert; and Gailes, Michael Edward, 3,829,724.

British Visqueen Limited: *See—*
Ellison, Anthony Alexander, 3,829,007.

Britton, James E.; and Welch, John A., to General Tire Company, The. Bendable elastomeric expansion joint. 3,829,229, Cl. 404-69.000.

Broberg, Georg, to Aktiebolaget Svenska Tlaktfabriken. Process and device for anchoring a band used to mount ventilation ducts ect. in a construction. 3,828,511, Cl. 52-741.000.

Brock, George W.; Cannon, Maxwell R.; and Shelledy, Frank B., to International Business Machines Corporation. Bias means for batch fabricated magnetic head and method of manufacture thereof. 3,829,896, Cl. 360-125.000.

Brock, Gordon L. Meter with electrically selectable scales. 3,829,775, Cl. 324-115.000.

Brodbeck, Helmut; and Haller, Hans, to Efka-Werke Fritz Kiehn G.m.b.H. Method and apparatus for producing cigarette filter sleeves. 3,828,658, Cl. 93-1.00c.

Brogren, Erik E., to Chicago Bridge & Iron Company. Tank with internal fail-safe valve. 3,828,819, Cl. 137-630.150.

Brohawn, Charles L., to United States of America, Army. Munition. 3,828,675, Cl. 102-2.000.

Brown & Williamson Tobacco Corporation: *See—*
Finn, Everett N., 3,828,796.
Harper, Patrick H.; Gregory, Charles F.; and Fisher, Phillip R., 3,828,798.
Litzinger, Elmer Francis, 3,828,800.
Schoeb, John, 3,829,164.

Brown, Arnold L.: *See—*
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Brown Boveri-Sulzer Turbomachinery Ltd.: *See—*
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Brown, Donald M.; and Dennison, Roger E., to Hewlett-Packard Company. Cable fastener for electrocardiograph electrodes. 3,829,826, Cl. 339-255.00r.

Brown, Frank E., to Minnesota Mining and Manufacturing Company. Disposable dental mirror. 3,829,199, Cl. 350-308.000.

Browne, David Alexander. Fruit de-stoning method and apparatus. 3,829,591, Cl. 426-285.000.

Bruce, Robert A.: *See—*
Booth, Franklin W.; and Bruce, Robert A., 3,828,524.

Bruekink, Bernard, to Holec N.V. Injector. 3,828,748, Cl. 123-139.0aj.

Bruhn, Max R. C., Jr., to Grand Haven Stamped Products Company. Adjustable linkage. 3,828,625, Cl. 74-512.000.

Brunin, Kirill Rudolfovich: *See—*
Truskanov, David Matveevich; Brunin, Kirill Rudolfovich; and Ratner, Lev Semenovich, 3,829,864.

Bryntse, Anders Ivar; and Berkestad, Karl Erik, to AB Bygg-Och Transportekonomi (BT). Multispeed hydraulic or pneumatic device. 3,828,650, Cl. 91-411.00a.

Bublitz, Donald E.: *See—*
Kurihara, Norman H.; and Bublitz, Donald E., 3,829,425.

Buch, Roman; Kocsis, Louis L.; and Sadove, Max S., to Theratron Corporation. Nebulizing apparatus and system. 3,828,773, Cl. 128-194.000.

Buchanan, Robert A.; Tecotzky, Melvin; and Wickersheim, Kenneth A. Rare earth phosphors for X-ray conversion screens. 3,829,700, Cl. 250-483.000.

Buck, Frederick A.; and Fritsch, Robert E. Direct-entry cash register. 3,828,465, Cl. 235-6.000.

Buddendeck, Gerald A.; and Cox, Herman L., to Xerox Corporation. Image registration in a multiple magnification photocopying system. 3,829,209, Cl. 355-14.000.

Buehler Corporation, The: *See—*
Beasley, Jack O., 3,829,740.

Buell, Eugene F.: *See—*
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Buffington, Robert B.: *See—*
Meadows, Ernest D.; and Buffington, Robert B., 3,829,036.

Buice, Joel B.; and Schwenker, David G., to General Electric Company. Self-bonding capacitor case insulation. 3,828,423, Cl. 29-570.000.

Bulova Watch Company, Inc.: *See—*
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Bunker Ramo Corporation: *See—*
Hubner, Oswald; and Benker, Horst Wilheim, 3,829,820.
Huttner, Theo, 3,828,427.
Masi, James Vincent, 3,829,847.

Bunn, Stuart E.; and Owsley, Herbert B. Plate valve structure. 3,829,253, Cl. 417-504.000.

Burdick, Robert E., to Rolair Systems, Inc. Low profile transporter. 3,828,884, Cl. 180-125.000.

Burdick, Robert E., to Rolair Systems, Inc. Retractable guide mechanism. 3,829,116, Cl. 280-43.230.

Burgess Products Company Limited: *See—*
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Burgess Vibrocrafters, Inc.: *See—*
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Burk, John L.; Hogan, Spurgeon G., Jr.; Larson, Russell H.; and McGilvray, Bruce L., to International Business Machines Corporation. Virtual memory system. 3,829,840, Cl. 340-172.500.

Burkhardt, Franz; and Hammacher, Konrad, to Hoffmann-La Roche, Inc. Device for displaying measured values. 3,829,771, Cl. 324-96.000.

Burleigh, Derek James Sutherland; and Hawkins, Brian Desmond, to Imperial Chemical Industries Limited. Cobalt oxide catalyst. 3,829,393, Cl. 252-459.000.

Burlington Industries, Inc.: *See—*
Pugh, Charles D., 3,828,540.
Tesoro, Giuliana C., 3,829,289.

Burns, Henry C.; and McConnell, George C., to Chromalloy Pharmaceutical, Inc. Method for control fo white muscle disease. 3,828,566, Cl. 424-131.000.

Burns, Henry C.; and McConnell, George C., to Chromalloy Pharmaceutical, Inc. Method for control of white muscle disease. 3,829,566, Cl. 424-131.000.

Burroughs Corporation: *See—*
Klehm, William G., Jr., 3,829,632.

Bush, Bruce D.: *See—*
Hafner, Claude J.; and Bush, Bruce D., 3,828,454.

Butler, Gene R., to Sperry Rand Corporation. Remote control mechanism for a bale unloading wagon. 3,828,945, Cl. 214-8.50r.

Butrova, Ekaterina Sergeevna: *See—*
Belyaev, Viktor Borisovich; Butrova, Ekaterina Sergeevna; Kiselev, Jury Vladimirovich; and Pozharskaya, Galina Tikhonovna, 3,829,733.

Butterfield, Louis M. Tethered pins pinsetter. 3,829,089, Cl. 273-44.000.

Buttery, Ron G.: *See—*
Guadagni, Dante G.; and Buttery, Ron G., 3,829,582.

Butti, Adriano; Prino, Giuseppe; and Mantovani, Marisa, to Crinos Industria Farmacobiologica S.p.A. Alkali metal salts of nucleotides useful as medicines for the fibronilityc system. 3,829,567, Cl. 424-180.000.

Buttner, Gerhard; and Klauke, Erich, to Bayer Aktiengesellschaft. Preparation of trifluoromethyl aromatic isocyanates. 3,829,460, Cl. 260-453.00p.

Butula, Ivan; and Karlovic, Gordana, to Pliva Pharmaceutical and Chemical Works. Process for preparing D-N,N'-bis-(1-hydroxymethylpropyl)-ethylene diamine. 3,829,493, Cl. 260-584.00r.

Bykov, Alexandr Vasilievich; Scherbakov, Vsevolod Sergeevich; Sudarkin, Lev Alexandrovich; and Pavlov, Roman Vladimirovich; deceased (by Gogolina, Tatyana Viktorovna; administrator). Device for controlling the capacity of reciprocating compressor. 3,829,25, Cl. 417-559.000.

Byram, George W.; and Speiser, Jeffrey M., to United States of America, Navy. Cascade transversal-filter phase-compensation network. 3,829,798, Cl. 333-70.00t.

Byrd, Priscilla D.; and Fritz, Henry E., to Union Carbide Corporation. Preparation of substituted hydroxy propionates. 3,829,415, Cl. 260-231.00a.

C. Reichert Optische Werke AG: *See—*
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Cadle, Terence Michael: *See—*
Farmer, Edwin Bruce; and Cadle, Terence Michael, 3,829,295.

Caithamer, George J.; Coleman, Ivan V.; and Lee, David K. K., to GTE Automatic Electric Laboratories, Incorporated. Central automatic message accounting system. 3,829,617, Cl. 179-7.10r.

Caldwell, Richard L., to Mobil Oil Corporation. Radioactive well logging to distinguish water and hydrocarbon saturation by delayed neutrons from oxygen. 3,829,687, Cl. 250-269.000.

California Institute of Technology: *See—*
Jeane, Harvey L., 3,829,839.

Calim, Thomas F. Machine for producing frozen confections. 3,828,572, Cl. 62-340.000.

Cameron, Frank L.: *See—*
Blewitt, Donald D.; Cameron, Frank L.; and Vondracek, Charles H., 3,829,808.

Campbell, Alexander J.: *See—*

Cornish, Alan H.; Foster, George W.; and Campbell, Alexander J., 3,828,372.
Campbell Chain Company: *See—*
Fink, Richard H., 3,828,550.
Campbell, Charles R.: *See—*
Mueller, Werner H.; and Campbell, Charles R., 3,829,490.
Campbell, Robert N., Jr.: *See—*
Gottlieb, Carl R.; and Campbell, Robert N., Jr., 3,829,145.
Canadian Patents and Development Limited: *See—*
Blais, Pierre J.J.,B.; Carlsson, David J.; and Wiles, David M., 3,829,324.
Canning, Michael L., to Intersil Incorporated. CMOS digital division network. 3,829,713, Cl. 307-225.00c.
Cannon, Maxwell R.: *See—*
Brock, George W.; Cannon, Maxwell R.; and Shelledy, Frank B., 3,829,896.
Cannondale Corporation: *See—*
Davis, Ronald N., 3,829,125.
Canon Kabushiki Kaisha: *See—*
Furahashi, Akira, 3,829,662.
Ogoro, Masanobu; and Takashi, Kiyoshi, 3,829,870.
Capdevielle, Marcel: *See—*
Capdevielle, Pierre, 3,828,555.
Capdevielle, Pierre, 30% to Giros, Jean-Loup and 30% to Capdevielle, Marcel. Power plant for various vehicles. 3,828,555, Cl. 60-413.000.
Car Tapes Inc.: *See—*
Herst, Richard J., 3,828,720.
Carbonnet, Henri; and Borie, Robert, to Groupement Atomique Alsacienne Atlantique. Forous conductive ceramic electrodes for corrosive liquid metal conduction pump. 3,829,243, Cl. 417-50.000.
Carborundum Company, The: *See—*
Carpenter, James H.; and Bowling, Joseph E., Jr., 3,829,029.
Cottis, Steve G.; Economy, James; and Nowak, Bernard E., 3,829,406.
Green, John S.; Luttrell, John E.; and Schmitz, James E., 3,828,934.
Cardinal of Adrian, Inc.: *See—*
MacDonald, Robert D., 3,829,137.
Carillon, Frank R.; Meyer, William E.; and Ramazzotti, Dario J., to McNeil Corporation. Rotational molding machine. 3,829,272, Cl. 425-430.000.
Carl Hurth Maschinen-und Zahnradfabrik: *See—*
Loos, Herbert, 3,828,597.
Carlisle Corporation: *See—*
Smith, Jerry L.; and Powling, Frank F., 3,829,633.
Carlson, Norman R.; and Zitelli, William E., to Westinghouse Electric Corporation. Hybrid computer system for rapid generation of electric power system loadflow solutions and transient stability analysis. 3,829,667, Cl. 235-151.210.
Carlsson, David J.: *See—*
Blais, Pierre J.J.,B.; Carlsson, David J.; and Wiles, David M., 3,829,324.
Carlsson, Hans Thorsten Henrik, to Aktiebolaget Svenska Elektromagneter. Flywheel magneto ignition device with capacitor-thyristor ignition combined with generator. 3,828,754, Cl. 123-149.00d.
Carlsson, Sven A., to Phelps Dodge Industries, Inc. Modular wall section for buildings. 3,828,502, Cl. 52-309.000.
Carmichael, Robert J.: *See—*
Hazelett, Robert William; and Carmichael, Robert J., 3,828,841.
Carpenter, James H.; and Bowling, Joseph E., Jr., to Carborundum Company, The. Abrasive blast cleaning system. 3,829,029, Cl. 241-19.000.
Carr, Albert A.: *See—*
Fleming, Robert W.; and Carr, Albert A., 3,828,578.
Fleming, Robert W.; and Carr, Albert A., 3,829,578.
Carr, Albert A.; Kinsolving, C. Richard; and Meyer, Donald R., to Richardson-Merrell Inc. Substituted piperidinoalkanone oxime derivatives. 3,829,433, Cl. 260-293.790.
Carr, Albert A.; and Grunwell, Joyce F., to Richardson-Merrell Inc. Xanthene derivatives. 3,829,440, Cl. 260-335.000.
Carrier Corporation: *See—*
Lesczynski, Michael, 3,828,567.
Carroll, J. W., & Sons; a division of U.S. Industries, Inc.: *See—*
Jones, Bill F., 3,829,680.
Carter, George D.: *See—*
Edenborough, Harry K.; Wernicke, Kenneth G.; and Carter, George D., 3,829,240.
Carter, John S. Bicycle transporting rack. 3,828,993, Cl. 224-42.10f.
Cary, Paul O. Machine for producing thin section specimens. 3,828,758, Cl. 125-13.00r.
Case, J. I., Company: *See—*
Klee, Maurice, 3,828,952.
Case, Laura K., to Itek Corporation. Physical development process utilizing viscous sensitizing metal solution. 3,829,317, Cl. 96-48.0pd.
Casensky, Bohuslav: *See—*
Vit, Jaroslav; Casensky, Bohuslav; Mamula, Milan; and Machacek, Jiri, 3,829,449.
Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,829,664.
Cater, Jerome D. Carpet cleaning machine. 3,828,390, Cl. 15-321.000
Caterpillar Tractor Co.: *See—*
Oestmann, Eldon D.; and Alexander, George F., 3,829,172.
Stedman, Robert N., 3,829,173.
Caterpillar Tractor Company: *See—*
Oestmann, Eldon D., 3,828,873.
Weis, Roger R., 3,828,742.
Cawley, Leo P. Electrolytic cell means. 3,829,375, Cl. 204-299.000.
Celanese Corporation: *See—*
Cohen, Stuart Lyle; and Stackman, Robert William (said Stackman assor. to), 3,829,405.
Powanda, Thomas Michael, 3,829,530.
Serad, George A.; and MacLean, Alexander F., 3,829,468.
Zey, Edward Gustave, 3,829,507.
Centner, Ronald M.; and Velek, Robert J., to Bendix Corporation, The. Self-adaptive process control. 3,829,750, Cl. 318-561.000.
Centre de Recherches Metallurgiques: *See—*
Courard, Camille Alphonse, 3,829,073.
Centre Electronique Horloger S.A.: *See—*
Vittoz, Eric Andre, 3,829,714.
Cerchione, Joseph D. Folding cot pack. 3,828,992, Cl. 224-9.000.
Cercone, Ronald: *See—*
Blake, Ivan C.; and Cercone, Ronald, 3,829,539.
Cernocky, Jiri; Riha, Miloslav; and Martinec, Josef, to Zbojovka Vsetin, narodni podnik. Guiding comb for picking the weft by a stream of gaseous pressure medium. 3,828,828, Cl. 139-127.00p.
Cervantes, Joyce P. Sanitary napkin. 3,828,786, Cl. 128-290.00r.
Cerveny, Walter J., to Triplett Corporation. Micropower autopolarity voltmeter. 3,829,774, Cl. 324-115.000.
Ceskoslovenska Akademie Ved: *See—*
Vit, Jaroslav; Casensky, Bohuslav; Mamula, Milan; and Machacek, Jiri, 3,829,449.
Chamberlain Industries Limited: *See—*
Mason, Brian Edward; and Young, Michael Iain, 3,828,400.
Champion International Corporation: *See—*
Hain, Paul O., 3,829,325.
Chancey, James C.; and Ellis, Leonard C., Jr. Reinforced concrete construction. 3,828,500, Cl. 52-292.000.
Chandler Evans Inc.: *See—*
Dawes, Michael H., 3,828,807.
Pocock, Adrian R. A.; and Cole, Michael A., 3,829,665.
Charest, Kenneth; Hanley, Robert F.; and Ornstein, Jacob L., to Texas Instruments Incorporated. Thermostat metals. 3,829,296, Cl. 29-195.500.
Charles, Ernest; Leroi, Jean-Claude; and Pech, Michel, to Progil. Process for the treatment of aqueous solutions of phenol and hydrogen chloride. 3,829,509, Cl. 260-621.00a.
Charman, Bernard William: *See—*
Sheffield, David John; Prosser, Paul Edward; and Charman, Bernard William, 3,828,603.
Charns, Norman; and Matthews, Leo J., to General Motors Corporation. Bleed cap for a vehicle air cushion inflator. 3,829,124, Cl. 280-150.0ab.
Chaska Chemical Company, Inc.: *See—*
Petsch, Harold A., 3,829,019.
Chaudhuri, Kiranendu; and Bachofner, Peter, to Swiss Aluminium Ltd. Method of operating a cell for the recovery of aluminum by electrolysis of aluminum oxide in a fluoride melt. 3,829,365, Cl. 204-67.000.
Chavis, Clarence S.: *See—*
Evans, John A.; Chavis, Clarence S.; and Ward, Rodney R., 3,829,851.
Chechik, Ljudmila Efimovna: *See—*
Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Nicolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.
Chekhovskay, Violettateofilovna: *See—*
Tolstoguzov, Vladimir Borisovich; Izjumov, Dmitry Borisovich; Grinberg, Valery Yakovlevich; Marusova, Alla Nikolaevna; and Chekhovskay, Violettateofilovna, 3,829,587.
Chemetron Corporation: *See—*
Rogers, Gerald L., 3,829,679.
Chemetron Corporation, mesne: *See—*
Annettoni, Ezio, 3,829,644.
Chemical Development Corporation: *See—*
Creighton, Albert M.; and Devaney, William D., 3,828,980.
Chemische Fabrik Pfersee GmbH: *See—*
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Chemische Werke Huls, AG: *See—*
Sommer, Neidhart; and Nordsiek, Karl-Heinz, 3,829,409.
Chemische Werke Huls Aktiengesellschaft: *See—*
Rassaerts, Heinz, 3,829,472.
Chen, Yok; and Abraham, Marvin M., to United States of America, Atomic Energy Commission. Submerged arc crystal growth process for growing transparent alkaline earth oxide single crystals. 3,829,391, Cl. 252-301.40r.
Cheng, Paul P. L., to Shing, Fu, Mfg. & Lumber Co., Ltd. Jointless construction method of the wooden products. 3,829,337, Cl. 156-63.000.
Chernakov, Gennady Anatolievich: *See—*
Olshansky, Nikolai Alexandrovich; Smelyansky, Matvei Yakovlevich; Lopatko, Anatoly Petrovich; Tkachev, Leonid Grigorievich; Kozhaev, Arkady Filippovich; Sapozhnikov, Alexandr Ivanovich; and Chernakov, Gennady Anatolievich, 3,829,651.
Chernobrivenko, Jury Sergeevich: *See—*

Borisenko, Gleb Pavlovich; Chernobrivenko, Jury Sergeevich; Kutsov, Jury Georgievich; Gorbanev, Arkady Alexeevich; Kukushkin, Oleg Nikolaevich; Krivobokov, Vladimir Nikolaevich; Pobegailo, Grigory Gavrilovich; and Nashivanko, Vitaly Dmitrievich, 3,828,600.

Chernyshev, Valentin Vasilievich: *See—*
Larjukhin, Grigory Artemovich; Chernyshev, Valentin Vasilievich; Nikitin, Vladislav Iosifovich; Serikov, Jury Mitrofanovich; and Kosinov, Vyacheslav Georgievich, 3,828,560.

Chesley, Ronald F.: *See—*
Goldfarb, Adolph E.; Everitt, Delmar K.; Chesley, Ronald F.; and Baer, Ralph H., 3,829,094.

Chestnutt, David, to United States of America, National Aeronautics and Space Administration. Variably positioned guide vanes for aerodynamic choking. 3,829,237, Cl. 415-181.000.

Chevret, Remy, to Regie Nationale des Usines Renault and Automobiles Peugeot. Automatic play take-up bearing bushes. 3,829,184, Cl. 308-237.000.

Chevron Research Company: *See—*
Adams Robert T.; Heath, William A.; and Wuopio, Richard A., 3,829,510.
Hannah, Eric D., 3,829,470.
Hutchison, Stanley O., 3,829,134.

Chicago Bridge & Iron Company: *See—*
Brogren, Erik E., 3,828,819.
McCabe, John Stanton, 3,828,565.

Chicago Musical Instrument Co.: *See—*
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Chikazawa, Katsuichi: *See—*
Ogura, Katsutoshi; and Chikazawa, Katsuichi, 3,828,665.

Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, to Hoffmann-La Roche Inc. Methylenedioxy-phenoxy derivatives as agents for upsetting hormone balance in insects. 3,829,577, Cl. 424-278.000.

Christensen, Svend; and Nielsen, Jacob August, to Crisplant A/S. Conveyor systems. 3,828,681, Cl. 104-88.000.

Chromalloy Pharmaceutical, Inc.: *See—*
Burns, Henry C.; and McConnell, George C., 3,828,566.
Burns, Henry C.; and McConnell, George C., 3,829,566.

Chugai, Alexei Dmitrievich: *See—*
Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.

Chvatal, Leland A.: *See—*
Hopkins, Walker L.; Chvatal, Leland A.; and White, William D., 3,829,376.

Ciba Limited: *See—*
Martin, Henry; Duerr, Dieter; and Hitz, Hans Rudolf, 3,829,485.

Ciba-Geigy (Japan) Ltd.: *See—*
Miyasaki, Norihiko; Ishii, Minoru; Sakurai, Hiroji; Suzuki, Hisao; Nagatsumo, Katuyoshi; and Furukawa, Hitoshi (said Furukawa assor. to), 3,829,228.

Ciba-Geigy AG: *See—*
Sieber, Alexander; Kny, Hermann; and Oliver, Ward H., 3,829,496.

Ciba-Geigy Corporation: *See—*
Sieber, Alexander; Kny, Hermann; and Oliver, Ward H., 3,829,496.

Cichetti, Michael Peter, Jr.; and Fretz, Jeffrey, to Bell Telephone Laboratories, Incorporated. Readout circuitry for elastic data bit stores. 3,829,843, Cl. 340-172.500.

Cimbollek, Gerhard: *See—*
Irmscher, Klaus; Kramer, Josef; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,829,421.

Cincinnati Milacron-Heald Corporation: *See—*
Uhtenwoldt, Herbert Rudolf, 3,828,481.

Clapsaddle, George S., Jr., to Clapsaddle Sales and Service Inc. Vehicle power take-off assembly. 3,828,878, Cl. 180-53.0fe.

Clapsaddle Sales and Service Inc.: *See—*
Clapsaddle, George S., Jr., 3,828,878.

Clare, Billy C.: *See—*
Gamm, Paul B.; and Clare, Billy C., 3,828,785.

Clark, Donald E.: *See—*
Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,829,459.

Clark, I. Dwight: *See—*
Darmara, Falih N.; and Clark, I. Dwight, 3,829,538.

Clark, Thomas R., to National Cash Register Company, The. Servodrive positioning device. 3,828,893, Cl. 188-67.000.

Clark, William H., III: *See—*
Evans, John A.; Chavis, Clarence S.; and Ward, Rodney R., 3,829,851.

Clarke, Walter Wilson Hugh. Locking system responsive to an electronic key. 3,829,836, Cl. 340-171.00r.

Clavelet, Georges: *See—*
Boutonnet, Alexandre; Clavelet, Georges; and Morieras, Gilbert, 3,828,542.

Claycomb, Dean A. Manually operated spring loaded jack lock assembly. 3,829,078, Cl. 269-310.000.

Clayton, James William Barnes: *See—*
Croasdale, Fred; Clayton, James William Barnes; and Norman, Keith, 3,828,539.

Clearman, Jack F.: *See—*
Robandt, William F., II; and Clearman, Jack F., 3,828,975.

Cleaveland, Charles M., to Westinghouse Electric Corporation. Heat conducting fins for bus bars and other electrical conductors. 3,829,647, Cl. 200-289.000.

Clement, Robert A., to Du Pont de Nemours, E. I., and Company. Catalytic synthesis of substituted pyridines from acetylenes and nitriles. 3,829,429, Cl. 260-290.00p.

Clements, Lloyd W., to Ireco Industries, Inc. Trail line shoe. 3,828,809, Cl. 137-344.000.

Cline, John A.: *See—*
Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and Atre, John D., 3,829,786.

Close, Stanley Wayne; Cordovani, John J.; and Shaffer, William E., to Stromberg-Carlson Corporation. Telephone ring trip circuit. 3,829,619, Cl. 179-18.0hb.

Closson, Addison W.; and Beckwith, Harry L., to Beckwith Corporation. Stiffening material for shoe parts. 3,829,351, Cl. 161-50.000.

Coates, Clarence A.: *See—*
Fisher, John G.; Weaver, Max A.; and Coates, Clarence A., 3,829,410.

Coates, Clarence A., Jr.; and Weaver, Max A., to Eastman Kodak Company. Thiadiazclyl-azo-indole compounds. 3,829,411, Cl. 260-158.000.

Coats & Clark, Inc.: *See—*
Hannes, Karl, 3,828,406.

Coaxial Dynamics, Inc.: *See—*
Stevens, Harold E., 3,829,770.

Cogar Corporation: *See—*
Reuter, James L.; and Sandhu, Jagtar S., 3,828,722.

Cohen, Arthur M. Means for arranging data. 3,828,453, Cl. 40-19.500.

Cohen, Harold; and Noto, William L., to Shop-Rite Supermarkets, Inc. Shopping cart with article storage preventing means under basket. 3,829,114, Cl. 280-33.99r.

Cohen, Stuart Lyle; and Stackman, Robert William, said Cohen assor. to Fiber Industries, Inc. and said Stackman assor. to Celanese Corporation. Phosphorus-containing polyesters. 3,829,405, Cl. 260-45.95d.

Cole, Edward L.; and McCoy, Frederic C., to Texaco Inc. Catalyst composition and isoparaffinic-olefin alkylation utilizing strong acid with a sulfonamide. 3,829,525, Cl. 260-683.630.

Cole, Gary William: *See—*
Horwath, Robert Otto; and Cole, Gary William, 3,829,362.

Cole, Michael A.: *See—*
Pocock, Adrian R. A.; and Cole, Michael A., 3,829,665.

Coleco Industries, Inc.: *See—*
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Coleman, Ivan V.: *See—*
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Coleman, W. Emile: *See—*
Rogers, Charles J.; and Coleman, W. Emile, 3,829,363.

Collette, Richard L., to Guardian Electric Manufacturing Company. Process for winding a coil on a reed switch having coil form means mounted on the switch capsule. 3,829,802, Cl. 335-154.000.

Collier, Samuel A.: *See—*
Peck, William H.; and Collier, Samuel A., 3,829,009.

Collinge, Robert Alan, to Smith, F., & Co., (Witworth) Limited. Machinery for treating textiles in sheet form with a fluid medium. 3,828,589, Cl. 68-158.000.

Collins, John J.: *See—*
Fornoff, Louis L.; Collins, John J.; and Taylor, Rolla D., 3,829,560.

Collins, Joseph C., to Sterling Drug, Inc. 2-(Carboxyphenyl) ethyl and 2-(carboxyphenyl) vinyl cyclopropyl carbinols. 3,829,475, Cl. 260-520.000.

Collins Radio Company: *See—*
Sather, Delaine C., 3,829,672.

Colt Industries Operating Corp.: *See—*
De Martelaere, David L., 3,828,746.

Columbia Broadcasting System, Inc.: *See—*
McMann, Renville H., 3,829,607.

Columbia Gas System Service Corporation: *See—*
Malcosky, Norman D.; McLean, Ronald H.; Singh, Kanwal N.; and Auh, Chung M., 3,828,575.

Combustion Equipment Associates, Inc.: *See—*
Monro, Richard J., 3,829,015.

Commissariat a L'Energil Atomique: *See—*
Borel, Joseph; Lacour, Jacques; and Merckel, Gerard, 3,829,884.

Commonwealth Scientific and Industrial Research Organization: *See—*
Merry, Lorraine Anne; and Solomon, David Henry, 3,829,564.

Commonwealth Scientific Corporation: *See—*
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Compagnie Industrielle des Telecommunications: *See—*
Melchior, Gerard, 3,829,613.

Computer Performance Instrumentation Incorporated: *See—*
Steinberg, William, 3,829,841.

Comstock & Wescott, Inc.: *See—*
Aspinwall, Peter, 3,828,409.

Condolios, Elie, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Hudraulic dredging apparatus. 3,829,160, Cl. 299-8.000.

Conover, Lloyd H.; and Woodward, Robert B., to Pfizer Inc. Octahydroanthracene-2-aminoacetic acids and esters and mixed anhydrides thereof. 3,829,453, Cl. 260-351.000.
Conrad, Frank. Kick putt device. 3,829,091, Cl. 273-67.00r.
Conrad, George A.: *See*—
Genzer, Jerome D.; and Conrad, George A., 3,829,498.
Conrad, Victoria N.; and Nemec, Charles A. Protective face mask. 3,828,366, Cl. 2-174.000.
Conroy, George J.; and Parkinson, Howard E., to United States of America, Interior. Paging visual signal. 3,829,856, Cl. 340-366.00r.
Container Corporation of America: *See*—
Murray, Lowell C.; and Ruble, John G., 3,829,008.
Conti, Gianni: *See*—
Bianchi, Massimo; and Conti, Gianni, 3,828,584.
Continental Can Company, Inc.: *See*—
Borchert, Jerome A., 3,828,977.
Kennedy, John B., Jr., 3,828,670.
Moller, Jens L., 3,828,963.
Continental Oil Company: *See*—
Ferrell, Ralph T., 3,829,520.
Tarter, James H., 3,828,875.
Cook, Calvin S.: *See*—
Lohr, Raymond J.; Cook, Calvin S.; and Seiersen, William K., 3,829,126.
Cooke, Clifford M. Hydraulic propulsion unit. 3,828,719, Cl. 115-35.000.
Cool Hans: *See*—
Grenendaal, Gradus Cornelis; Cool Hans; DeVos, Jacob; and Van Zuuren, Eduard Willem, 3,829,783.
Cooper, George W., to Fruehauf Corporation. Spreader list, trim and skew adjustment means. 3,828,940, Cl. 212-14.000.
Cooper, Geroge F. Portable barbecue assembly. 3,828,759, Cl. 126-9.00r.
Cooper, Wayne E.: *See*—
Province, William F.; and Cooper, Wayne E., 3,828,413.
Copa, William M.; and Pradt, Louis A., to Sterling Drug Inc. Waste gas purification. 3,828,525, Cl. 55-68.000.
Cordovani, John J.: *See*—
Close, Stanley Wayne; Cordovani, John J.; and Shaffer, William E., 3,829,619.
Cordsen, Gerd: *See*—
Borse, Dietrich; Lockemann, Albert; and Cordsen, Gerd, 3,828,646.
Corman, James C.; and Walmet, Gunnar E., to General Electric Company. Heat transfer device. 3,828,849, Cl. 165-105.000.
Cormey, Walter P.: *See*—
Letson, Richard A.; and Cormey, Walter P., 3,829,781.
Cornelius Company, The: *See*—
Birrell, Peter Leslie, 3,828,973.
Corning Glass Works: *See*—
Perloff, David S.; Kerr, John T.; and Marley, James A., 3,829,890.
Cornish, Alan H.; Foster, George W.; and Campbell, Alexander J., to Koehler-Dayton, Inc. Recirculating sewerage system. 3,828,372, Cl. 4-10.000.
Cornthwaite, Eric: *See*—
Priestley, Michael John; and Cornthwaite, Eric, 3,829,801.
Correia, Manuel G. Portable milking stall. 3,828,733, Cl. 119-14.030.
Cottis, Steve G.; Economy, James; and Nowak, Bernard E., to Carborundum Company, The. Fabricable infusible para-oxybenzoyl polyester production. 3,829,406, Cl. 260-47.00c.
Coulter Information Systems, Inc.: *See*—
Kuehnle, Manfred R., 3,829,373.
Council, Malcolm N., to Gardner-Denver Company. Crawler undercarriage. 3,828,874, Cl. 180-9.600.
Courard, Camille Alphonse, to Centre de Recherches Metallurgiques. Devices blowing-in oxygen through the bottoms of metallurgical converters. 3,829,073, Cl. 266-41.000.
Cousino, Bernard A., to Faraday, Inc. Tape cartridge and player apparatus. 3,829,033, Cl. 242-55.19a.
Coutinho, John. Hydraulic jib. 3,828,941, Cl. 212-144.000.
Cox, A. B. Trailer hitch. 3,829,130, Cl. 280-479.000.
Cox, Eric Reginald; and Wall, John Shiel Clements, to Babcock & Wilcox Limited. Material handling apparatus. 3,828,915, Cl. 198-88.000.
Cox, Gordon John: *See*—
Grant, John William; and Cox, Gordon John, 3,829,311.
Cox, Herman L.: *See*—
Buddendeck, Gerald A.; and Cox, Herman L., 3,829,209.
Cox, Joseph F. Technique for aligning anchor bolts. 3,829,540, Cl. 264-34.000.
CPM/Europe N.V.: *See*—
Vink, Johannes Albertus, 3,828,661.
Crane Packing Company: *See*—
Wheelock, Edward A., 3,829,106.
Crawford, Chester C. Pulp bound compacted fuels. 3,829,297, Cl. 44-15.00d.
Creighton, Albert M.; and Devaney, William D., to Chemical Development Corporation. Dispenser for precisely metered dispensing of viscous fluids. 3,828,980, Cl. 222-137.000.
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Croasdale, Fred; Clayton, James William Barnes; and Norman, Keith, to Platt International Limited. Open-end textile spinning machines. 3,828,539, Cl. 57-58.910.
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Cross, J. Stanton, Sr. Delimbing method and apparatus. 3,828,835, Cl. 144-309.0ac.
Crossman, Richard L., to Goodyear Tire & Rubber Company, The. Telescopic piston for added brake wear adjustment. 3,828,894, Cl. 188-71.800.
Crowle, Brian, to Integrated Photomatrix Limited. Shift registers. 3,829,711, Cl. 307-221.00c.
Crowley, Richard P. Oxybis (benzenesulfonylpolyalkoxyalkanols) and their use as surfactants. 3,829,500, Cl. 260-607.00a.
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Crutchfield, Marvin M.; and Harken, Russel D., to Monsanto Company. Detergent formulations. 3,829,384, Cl. 252-89.000.
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Curran, Adrian Charles Ward, to Wyeth, John, & Brother Limited. 8-Aryl-3-azabicyclo-[3,3,1]-nonanes. 3,829,427, Cl. 260-293.540.
Curtiss, Lawrence F.; and Hall, Richard W., to American Cystoscope Makers, Inc. Surgical snare. 3,828,790, Cl. 128-320.000.
Custers, Joseph Lambert Maria; and Raal, Frederick Anton, to De Beers Industrial Diamond Division Limited. Novel diamond particle particularly for use in heat sinks. 3,828,848, Cl. 165-80.000.
Cutler, Thomas P.; and Dollinger, Kenneth, to United States of America, Navy. Signal correlator. 3,829,860, Cl. 343-9.000.
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Gazzola, Ivaldo, deceased; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,828,673.
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de Llano, Mary Duarte. Reflective means used in connection with fluorescent tubes or lamps. 3,829,677, Cl. 240-51.11r.
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Delamater, Charles E.; Obermiller, Herbert C.; and Kryah, John C., to Diebold, Incorporated. Deal drawer safety device. 3,828,698, Cl. 109-19.000.
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Deslongchamps, Pierre, to Universite de Sherbrooke. Ozonolysis of acetals. 3,829,413, Cl. 260-210.00r.
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Dhingra, Ashok Kumar, to Du Pont de Nemours, E.I., and Company. Process for preparing fiber reinforced metal composite structures. 3,828,839, Cl. 164-97.000.
Diamond, Julius; and Douglas, George Henry, to Rorer, William H., Inc. Tetrahydronaphthylalkanoic acids and their derivatives. 3,829,467, Cl. 260-501.160.
Dickert, Joseph John, Jr.; and Williams, Albert Lloyd, to Mobil Oil Corporation. Process for preparing keto containing phosphonates. 3,829,534, Cl. 260-970.000.
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Dillman, Richard F.; Larsen, James L.; and Nardizzi, Alfred M., to Hewlett-Packard Company. Electrocardiograph telemetry system having circuitry for indicating inoperative conditions. 3,829,782, Cl. 325-186.000.
Dilot, Rolf Magnus. Compartmented container. 3,829,003, Cl. 229-31.00r.
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Duncan, Theodore. Wig cleaning device. 3,828,588, Cl. 68-5.00c.
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Duryea, Charles S. Boat flanking rudder system. 3,828,713, Cl. 114-163.000.
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Ehlschlager, Arthur John, to Western Electric Company, Incorporated. Bi-directional translator. 3,829,620, Cl. 179-18.0et.
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Eidelberg, Jonah, to Electrical Fittings Corporation. Slip-fit electrical coupling. 3,829,136, Cl. 285-383.000.
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Eimer, Klaus; and Thal, Heinz, to Ludwig Taprogge (Cleaning Installations for Pipe Heating Exchange). Filter screen installation. 3,828,930, Cl. 210-137.000.
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Eissinger, Ramon C.; and Provancher, Ronald W., to Ford Motor Company. Hood auxiliary hold-down device. 3,828,885, Cl. 180-69.00c.
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Ellis, Leonard C.; and Kise, Mearl A., to Virginia Chemicals Inc. Groundwood pulp bleaching with sodium hydrosulfite containing diglycolates. 3,829,358, Cl. 162-71.000.
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Elwood, Albert A. Low frequency drill bit apparatus and method of locating the position of the drill head below the surface of the earth. 3,828,867, Cl. 175-45.000.
Ely, Richard N. Dental device. 3,828,804, Cl. 132-91.000.
Emeny, George B. Liquid level control. 3,829,241, Cl. 417-17.000.
Emerson Electric Co.: *See—*
Miller, David E., 3,829,811.
Emily Herman Thompson: *See—*
Herman, Joseph L., 3,828,723.
Emmons, George Harvey. Detachable support tray for ladders. 3,829,051, Cl. 248-238.000.
Enberlein, Wolfgang: *See—*
Heider, Joachim; Enberlein, Wolfgang; and Engelhardt, Gunther, 3,829,570.
Endo Laboratories, Inc., mesne: *See—*
Berger, Joel G.; and Teller, Sonia R., 3,829,431.
Engelhard Minerals & Chemicals Corporation: *See—*
Highberg, Carle W.; and Roesch, George R., 3,828,479.
Engelhardt, Gunther: *See—*
Heider, Joachim; Enberlein, Wolfgang; and Engelhardt, Gunther, 3,829,570.
Engelsmann, Dieter: *See—*
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; and Schroeder, Rolf, 3,829,875.
Engis Corproation: *See—*
Metzger, Michael V.; and Pearce, Reginald, 3,829,299.
English Electric Company Limited, The: *See—*
Heard, Jeffery Gerald, 3,829,723.
Enns, Mark K.: *See—*
Haley, Paul H.; and Enns, Mark K., 3,829,669.

Ensinger, William H. Adjustable wrist support for bowling. 3,829,090, Cl. 273l54.00b.

Ensminger, Clifford H.; and Ruggiero, Edward M., to Texas Instruments Incorporated. Multi-character electronic display. 3,829,653, Cl. 219-216.000.

Entreprise de Recherches et d'Activites Petrolieres Elf: *See—*
Boy-Marcotte, Jean Louis; Simmonnet, Jacques Louis Paul; Marchal, Philippe Albert Hippolyte; and Verrien, Jean Prudent Fernand Rene, 3,828,574.

Epelbaum, Quido C. Adapter for convertible car seat and stroller. 3,829,113, Cl. 280-30.000.

Erben, Klaus-Dieter: *See—*
Born, Gunthard; Erben, Klaus-Dieter; and Mohr, Friedbert, 3,829,792.

ERCO Industries Limited: *See—*
Winfield, John D., 3,829,557.

Erickson, Frederick E.: *See—*
De Lille, Richard A.; and Erickson, Frederick E., 3,828,616.

Erico Products, Inc.: *See—*
Geiger, Willard L., 3,829,682.

Eriksson, Algot Ingemar, to AB Printing Equipment. Method and arrangement for checking the alignment of a paper sheet in paper sheet feed apparatus. 3,829,702, Cl. 250-557.000.

Eriksson, Karl Gunnar; Wahlgren, Sven Erik; and Mangen, Carl Arnold. Method and means for indicating temperature variations in a product, preferably a food product. 3,828,612, Cl. 73-356.000.

Erlichman, Irving, to Polaroid Corporation. Method of clamping and riveting parts. 3,828,421, Cl. 29-522.000.

Ernst Winter & Sohn: *See—*
Borse, Dietrich; Lockemann, Albert; and Cordsen, Gerd, 3,828,646.

Ernvein, Joel, to Thomson-CSF. Acoustical holography system for acoustic image conversion. 3,829,827, Cl. 340-5.00h.

Eshraghian, Kamran, to U.S. Philips Corporation. Switching device. 3,829,784, Cl. 328-130.000.

Eskeli, Michael. Turbine having powered inner rotor for imparting additional velocity to entering fluid. 3,828,553, Cl. 60-330.000.

Eskeli, Michael. Heating and cooling wheel. 3,828,573, Cl. 62-401.000.

Essilor International: *See—*
Tagnon, Luc Andre, 3,828,842.

Esso Production Research Company: *See—*
Barry, Adelbert; and Heintz, Karl O., 3,829,816.

Esso Research and Engineering Company: *See—*
Mueller, Wolfgang H.; Thaler, Warren A.; and Oswald, Alexis A., 3,829,535.

Etablissements Carpano & Pons S.A.: *See—*
Nepote, Alain Robert, 3,829,041.

Ethyl Corporation: *See—*
Ashby, Eugene C.; Taylor, William D.; and Winkler, Donald A., 3,829,390.
Kobetz, Paul; and Lindsay, Kenneth L., 3,829,471.
Robinson, Gene C., 3,829,383.

Ethyl Development Corporation: *See—*
Marchant, Paul A., 3,828,957.

Euroclean AB: *See—*
Heden, Olle, 3,829,024.

Evanega, George R.; Kuhla, Donald E.; and Sarges, Reinhard, to Pfizer Inc. Piperidinesulfinylurea derivatives. 3,829,434, Cl. 260-293.560.

Evans, Chandler, Inc.: *See—*
Andersen, Joseph J., 3,829,058.

Evans, John A.; Chavis, Clarence S.; and Ward, Rodney R., to Clark, William H., III. Intrusion detection apparatus employing a pressure-differential detector. 3,829,851, Cl. 340-258.00r.

Evans, O. T. Gas well equipment. 3,829,245, Cl. 417-108.000.

Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; Everitt, Delmar K.; Chesley, Ronald F.; and Baer, Ralph H., 3,829,094.

Evers, James D., deceased (by Bender, Louisa E.; executors; and Bender, Donald A.), to Midland-Ross Corporation. Temperature resistant seal and valve assembly. 3,828,810, Cl. 137-494.000.

Factory Mutual Research Corporation, mesne: *See—*
Woodward, Richard V.; and McMahon, Richard A., 3,828,855.

Fairbanks Morse Inc.: *See—*
Reddy, K. Narashimha, 3,828,753.

Falchle, Jorg: *See—*
Bleicher, Manfred; Falchle, Jorg; Hahner, Reinhard; Hansel, Gernot; Schmid, Wolfgang; and Wanner, Karl, 3,828,863.

Faraday, Inc.: *See—*
Cousino, Bernard A., 3,829,033.

Farallon Industries, Inc.: *See—*
Shamlian, Ralph B.; and Hollingsworth, Ashley J., 3,828,611.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Krimm, Heinrich; Freitag, Dieter; and Boie, Immo, 3,829,462.

Farber, Milton H.; and Belinkoff, Irving R., to LCA Corporation. Oven. 3,828,760, Cl. 126-21.00a.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Bartmann, Wilhelm; and Alpermann, Hans-Georg, 3,829,571.
Bartmann, Wilhelm; Alpermann, Hans-Georg; and Jochum, Christian, 3,829,572.
Frank, Hermann; and Huber, Rudolf, 3,829,757.
Millauer, Hans, 3,829,512.
Rammelt, Peter-Paul; and Siegemund, Gunter, 3,829,483.
Schladetsch, Hans Jakob, 3,829,454.
Speitschka, Ernst; and Landler, Josef, 3,829,439.
Zimmermann, Johann Wolfgang, 3,829,402.

Farmer, Edwin Bruce; and Cadle, Terence Michael, to Brico Engineering Limited. Sintered iron based articles infiltrated with copper based metals. 3,829,295, Cl. 29-182.100.

Farr, William W., Jr., to Honeywell Information Systems Inc. Controller for rotational storage device having linked information organization. 3,829,837, Cl. 340-172.500.

Farren, Paul Lester. Storage system. 3,828,680, Cl. 104-88.000.

Farrington, Diane G.: *See—*
Meloy, Gilbert K.; and Farrington, Diane G., 3,829,532.

Farrington, Grant M., Jr.; and Treffner, Walter S., to General Refractories Company. Direct bonded refractory bricks. 3,829,541, Cl. 264-65.000.

Fazekas, Charles, to Elias Productions Incorporated. Surface friction analyzer. 3,828,605, Cl. 73-9.000.

Fechant, Louis Joseph: *See—*
Van, Trong N'Guyen; and Fechant, Louis Joseph, 3,829,746.

Federal Paper Board Company, Inc.: *See—*
Rossi, Harry J., 3,828,926.

Feinberg, Jacob Howard, to American Can Company. 4-Methoxy benzene diazonium hexafluorophosphate catalyst for photopolymers in epoxy systems. 3,829,369, Cl. 204-159.110.

Feiner, Maria; Gubler, Michel; and Guillon, Joseph, to Monsanto Company. Flame retardant composition. 3,829,394, Cl. 260-4.0ar.

Feingold, Michael H., to Polaroid Corporation. 3-(3'-Lower carboalkoxy-4'hydroxy-1'-napthyl) -3-(3'-carboxy-4''-hydroxy-1''-napthyl) naphthalide. 3,829,445, Cl. 260-343.20r.

Fellenstein, Ronald L. Tonneau cover and seat assembly for pickup-type vehicle boxes. 3,829,151, Cl. 296-64.000.

Fend, Heinrich, to VAT Aktiengesellschaft fur Vakuum- Apparate-Technik. Deformable sealing ring arrangement. 3,829,062, Cl. 251-332.000.

Fenichel, Richard L.: *See—*
Wolf, Milton; Sellstedt, John H.; and Fenichel, Richard L., 3,829,488.

Fenlon, Joseph A., Jr.: *See—*
Spiroff, Carl M., 3,828,767.

Ferdon, Gilbert Douglas: *See—*
Derr, Paul B.; Ferdon, Gilbert Douglas; and Harwood, Robert George, 3,829,821.

Ferrell, Ralph T., to Continental Oil Company. Inhibition of olefin isomerization and reverse displacement in catalytic displacement reactions. 3,829,520, Cl. 260-677.000.

Fiber Industries, Inc.: *See—*
Cohen, Stuart Lyle; and Stackman, Robert William (said Cohen assor. to), 3,829,405.

Fichtel & Sachs AG: *See—*
Schwerdhofer, Hans-Joachim, 3,828,627.

Fickle, J. Clark; and Gerhardt, Ralph August, to Deere & Company. Harvesting machine suspension system. 3,828,532, Cl. 56-14.400.

Fidani, Antonio: *See—*
Veronica, Giacinto; and Fidani, Antonio, 3,829,389.

Fieglein, James M.; and Csanady, Michael, Jr., to Westinghouse Electric Corporation. System and method for operating a steam turbine with dual hydraulic independent overspeed protection especially adapted for a nuclear reactor powered steam turbine. 3,829,32, Cl. 415-1.000.

Fieser, Arthur H.; and Mobley, Loreley S. Metal slab conditioning system. 3,829,072, Cl. 266-23.00h.

Figari, Jorge Galvez. Elevated monorail urban or suburban transportation system. 3,828,684, Cl. 104-124.000.

Finch, Robert A.: *See—*
Peterson, Richard H.; and Finch, Robert A., 3,829,597.

Finckh Metalltuch-und Maschinenfabrik: *See—*
Holz, Emil, 3,829,360.

Fink, Richard H., to Campbell Chain Company. Coupling link. 3,828,550, Cl. 59-85.000.

Finlay, Robert L. Spring biased arrow rest. 3,828,757, Cl. 124-41.000.

Finn, Everett N., to Brown & Williamson Tobacco Corporation. Cigarette cutoff and filter tip attachment registration apparatus. 3,828,796, Cl. 131-21.00b.

Finneran, John L. Rotary mower. 3,828,533, Cl. 56-320.200.

Finsterwalder, Gerhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. Arrangement and embodiment of a spark plug with a diesel reciprocatory piston internal. 3,828,739, Cl. 123-32.00r.

Finucane, Thomas P.; and Halik, Joseph J., to General Foods Corporation. Dipeptide low-grade coffees. 3,829,588, Cl. 426-354.000.

Firestone Tire & Rubber Company, The: *See—*
Halasa, Adel F.; and Snyder, Dennis L., 3,829,554.

Fisher, John G.; Weaver, Max A.; and Coates, Clarence A., to Eastman Kodak Company. 5-(Cyanovinylene)-2-thiazolylazo-aniline compounds. 3,829,410, Cl. 260-158.000.

Fisher, John M. Method of making inflatable assembly with bulkheads and resulting article. 3,829,353, Cl. 161-92.000.

Fisher, Phillip R.: *See—*
Harper, Patrick H.; Gregory, Charles F.; and Fisher, Phillip R., 3,828,798.

Flam, Eric, to Johnson & Johnson. Support means for the even distribution of body pressure. 3,828,378, Cl. 5-345.000.

Flannelly, William G., to Kaman Aerospace Corporation. Vibration isolator. 3,829,052, Cl. 248-317.000.

Fleming, Ancel H. Proportional fluid distribution assembly for back hoe having reciprocating teeth. 3,828,951, Cl. 214-138.00r.

Fleming, Robert W.; and Boothroy, George. Gas actuated dehorning tool. 3,828,431, Cl. 30-228.000.

Fleming, Robert W.; and Carr, Albert A., to Richardson Merrell Inc. Antiviral compositions containing bis-basic ethers and thioethers of xanthene and xanthen-9-ones and methods of treating viruses therewith. 3,828,578, Cl. 424-283.000.

Fleming, Robert W.; and Carr, Albert A., to Richardson-Merrell Inc. Antiviral compositions containing bis-basic ethers and thioethers of xanthene and xanthen-9-ones and methods of treating viruses therewith. 3,829,578, Cl. 424-283.000.

Flex-O-Laotrs, Inc.: *See—*
Platt, Thomas W.; and Arnold, Harmon W., 3,829,048.

Flextac Nodwell Ltd.: *See—*
Thomas, Ian A., 3,829,174.

Floating Poing Systems, Inc.: *See—*
Bouton, Frank M., Jr.; and Prints, Thomas R., 3,829,673.

Flores, Jose A.: *See—*
Lent, William E.; and Flores, Jose A., 3,829,403.

Flueckiger, Noah, to Acme-Cleveland Corporation. Electric coupling control means. 3,828,901, Cl. 192-12.00d.

Flying Dutchman, Inc.: *See—*
Lepley, James W., 3,828,946.
Lepley, James W., 3,828,947.

FMC Corporation: *See—*
Boeck, David J., 3,828,450.
Hampton, Quentin L.; and Matras, Edward J., 3,828,933.
McRobert, Leon R., 3,828,534.
Neuman, Milton C., 3,828,657.
Wiethoff, Roger H., 3,828,654.

Fogelberg, Mark J., to Borg-Warner Corporation. Differential for four-wheel drive. 3,828,877, Cl. 180-44.00r.

Food Equipment, Inc.: *See—*
Dawson, Clarence G., 3,828,978.

Foote, Chauncey P., Jr.: *See—*
Gazzola, Ivaldo, deceased; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,828,672.
Gazzola, Ivaldo, deceased; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,828,673.

Forchini, James F.: *See—*
Machado, Mark A.; and Forchini, James F., 3,829,107.

Ford Motor Company: *See—*
Eissinger, Ramon C.; and Provancher, Ronald W., 3,828,885.
Hailstone, Victor L.; Harper, Ronald N.; and Oliver, Wilfred T., 3,829,069.
Harrison, Clarence E., 3,829,717.
Holka, Thomas C., 3,829,123.
MacLennan, Alastair S., 3,829,236.
Medrick, John D., 3,828,745.
Zillner, Gunter, 3,828,623.

Ford, Robert E., to United States of America, Navy. Electric power amplification at low frequencies. 3,829,788, Cl. 330-10.000.

Forni, Jay S. Bell fitting for reinforced plastic-mortar pipe and the like. 3,829,135, Cl. 285-55.000.

Fornoff, Louis L.; Collins, John J.; and Taylor, Rolla D., to Union Carbide Corporation. Recovery of sulfur dioxide from gas streams. 3,829,560, Cl. 423-522.000.

Forsheda Ideutveckling AB: *See—*
Derman, Karl Gustav Einar, 3,829,227.

Forster, Friedrich M. O. Method and device for magnetographic inspection. 3,829,762, Cl. 324-37.000.

Foseco International Limited: *See—*
Stanbridge, Roger Philip, 3,829,320.

Foster, George W.: *See—*
Cornish, Alan H.; Foster, George W.; and Campbell, Alexander J., 3,828,372.

Foucard, Albert: *See—*
DeMendez, Michel Ossona; Dupuy, Jean-Marie; Harreton, Roland; and Foucard, Albert, 3,829,221.

Fowler, Larry G., to Sugar Cane Growers Cooperative of Florida. Sugar cane loader-cleaner machine. 3,828,536, Cl. 56-502.000.

Fox, Donald H., to Spinal position patient restraint. . 3,829,079, Cl. 269-328.000.

Fraley, Francis C. Outdoor wash stand. 3,828,373, Cl. 4-170.000.

Frame, Goudlas J.: *See—*
Graham, Robert G.; and Frame, Goudlas J., 3,828,735.

Frank Gilbert H.: *See—*
Woolfson, Martin G.; and Frank Gilbert H., 3,829,747.

Frank, Hermann; and Huber, Rudolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Systme for controlling the frequency of an alternating current converter in response to load changes. 3,829,757, Cl. 321-18.000.

Franke, Preston H., Jr.: *See—*
Bertram, James L.; Whiteside, Ross C., Jr.; and Franke, Preston H., Jr., 3,829,354.

Frankland, John T.; and McLaughlin, Richard J. Electrical combination lock apparatus. 3,829,834, Cl. 340-149.00r.

Fravel, John C.: *See—*
Ha, In W.; and Fravel, John C., 3,829,745.

Frazier, Lauren, to General Electric Company. Ice maker. 3,828,568, Cl. 62-186.000.

Freedman, David Daniel, to RCA Corporation. High-speed analog-to-digital converter. 3,829,853, Cl. 340-347.0ad.

Freeny, Charles C., Jr., to Information Identification Company, Inc. Code element identification method and apparatus. 3,829,833, Cl. 340-149.00r.

Frei, Paul, to Sulzer Brothers Ltd. Feed water control in forced circulation steam generators. 3,828,738, Cl. 122-504.200.

Freisberg, Karl-Otto: *See—*
Irmscher, Klaus; Kramer, Josef; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,829,421.

Freitag, Dieter: *See—*
Krimm, Heinrich; Freitag, Dieter; and Boie, Immo, 3,829,462.

Freitag, Herbert: *See—*
Dorner, Nikolaus; and Freitag, Herbert, 3,828,651.

Fretz, Jeffrey: *See—*
Cichetti, Michael Peter, Jr.; and Fretz, Jeffrey, 3,829,843.

Frey, Gunter; Hoflacher, Arthur Nikolaus; and Ebing, Walter, to Knecht Filterwerke Gesellschaft mit beschraenkter Haftung. Apparatus for filtering oil vapors. 3,828,529, Cl. 55-419.000.

Fritsch, Robert E.: *See—*
Buck, Frederick A.; and Fritsch, Robert E., 3,828,465.

Fritz, Henry E.: *See—*
Byrd, Priscilla D.; and Fritz, Henry E., 3,829,415.

Fritz, Hermann: *See—*
Gunther, Fritz; and Fritz, Hermann, 3,829,181.

Fritz, Wolfgang: *See—*
Neumann, Klaus; and Fritz, Wolfgang, 3,828,814.

Frost, C. L., & Son, Inc.: *See—*
Frost, Charles C.; and Weis, Siegfried K., 3,828,619.

Frost, Charles C.; and Weis, Siegfried K., to Frost, C. L., & Son, Inc. Hub or bearing housing, pulley and method of making the same. 3,828,619, Cl. 74-230.010.

Fruehauf Corporation: *See—*
Cooper, George W., 3,828,940.

Fuch, Alvin J., to Medalist Industries, Inc. Squeegee and flood bar actuator with peeling screen clamp. 3,828,671, Cl. 101-123.000.

Fuchs, Leo, to Mansfield Tire & Rubber Company, The. Concrete form. 3,829,057, Cl. 249-175.000.

Fuhr, John R. Windshield wiper blade snow and ice scraper attachment. 3,828,388, Cl. 15-250.410.

Fuji Photo Film Co., Ltd.: *See—*
Ozutsumi, Minoru; Miyazawa, Yoshihide; Motohashi, Katsuichi; and Kiritani, Masataka, 3,829,322.

Fujii, Masaru; Oyagi, Syuji; Kamei, Tutomu; and Mori, Inosuke, to Mitsubishi Jukogyo Kabushiki Kaisha. Control system for once-through boilers. 3,828,737, Cl. 122-406.ost.

Fujikura Cable Works Ltd.: *See—*
Ishikawa, Hisao; Osanai, Hiroshi; and Kawabata, Terutsugu, 3,829,602.

Fujimoto, Hiroshi, to Nippon Electric Company, Limited. Multilevel code transmission system. 3,829,779, Cl. 325-38.00a.

Fujioka, Katsuichi, to Koyo Electronics Industry Co., Ltd. Device for installing a housing or. 3,829,599, Cl. 174-48.000.

Fujita, Kinji, to Kabushiki Kaisha Suwa Seikosha. Quartz crystal timepiece. 3,828,547, Cl. 58-50.00r.

Fukai, Masakazu: *See—*
Tohi, Atsutomo; Sakai, Kunio; Fukai, Masakazu; and Tsujimoto, Yoshinobu, 3,829,333.

Fukui, Takasuke: *See—*
Watanabe, Teruji; Fukui, Takasuke; and Suzuki, Shizuo, 3,829,894.

Furahashi, Akira, to Canon Kabushiki Kaisha. Recording medium having concealed information as input for electronic computer. 3,829,662, Cl. 235-61.12r.

Furon, Leon D.; Robinson, John A.; and Menick, Jack E., said Furon and said Robinson assor. to said Menick, Jack E. Tube inspection system with interlaced scanning. 3,828,609, Cl. 73-67.80s.

Furukawa, Hitoshi: *See—*
Miyasaki, Norihiko; Ishii, Minoru; Sakurai, Hiroji; Suzuki, Hisao; Nagatsumo, Katsuyoshi; and Furukawa, Hitoshi, 3,829,228.

Fuselier, Christopher S.: *See—*
Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and Atre, John D., 3,829,786.

Fuss, Gary. Lantern shields. 3,829,681, Cl. 240-110.000.

Fussell, Edward B., Jr.; and Redmon, Don L., to Water Bonnet, Inc. Brace and method of bracing a windshield to a dashboard. 3,829,153, Cl. 296-90.000.

Futaki, Kiyoshi; Haino, Kozo; and Kohmura, Isao, to Mitsubishi Paper Mills, Ltd. Heat sensitive recording paper. 3,829,401, Cl. 260-38.000.

Future Systems, Inc.: *See—*
Anderson, Ralph; and Beyer, Rodney B., 3,829,549.

Gadefelt, Goran Robert: *See—*
Egerborg, Bo Malte Staffan; Gadefelt, Goran Robert; Magbjer, Gunnar Ingemar; and Spang, Kjell, 3,828,504.

Gaege, Gotz: *See—*
Elwert, Dietmar; and Gaege, Gotz, 3,829,635.

GAF Corporation: *See—*
Bettoli, Phillip Stephen, 3,828,510.

Gailes, Michael Edward: *See—*
Sutton, Michael Gilbert; and Gailes, Michael Edward, 3,829,724.

Gainesville Machine Company, Inc.: *See—*
Harben, Grover S., Jr., 3,828,397.

Galgoczy, Gabor; Gyulai, Zoltan; Palagyi, Tivadar; and Wagensommer, Jozsef. Non-slip, high strength bolted joints. 3,828,515, Cl. 52-758.00f.

Gambashidze, Zurab Dmitrievich: *See—*
Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich;

Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich, 3,829,042.
Gamm, Paul B.; and Clare, Billy C., to Jung Products, Inc. Liner for incontinent pants. 3,828,785, Cl. 128-288.000.
Gardner, John Nicholson, to Smith Kline & French Laboratories. Guanidinoalkylbenzodioxan derivatives. 3,829,441, Cl. 260-340.300.
Gardner, Lloyd E., to Phillips Petroleum Company. Conversion of gem-difluoro compounds to fluoroalkenes and fluoroalkapolyenes. 3,829,513, Cl. 260-653.500.
Gardner, Willis W., to Waukesha Bearings Corporation. Pad construction for tilting pad thrust bearing. 3,829,180, Cl. 308-160.000.
Gardner-Denver Company: *See—*
Council, Malcolm N., 3,828,874.
Gartner Research & Development Co.: *See—*
Gartner, William Joseph, 3,828,771.
Gartner, William Joseph, to Gartner Research & Development Co. Oral hygiene device. 3,828,771, Cl. 128-66.000.
Gas Development Corporation: *See—*
Weil, Sanford A., 3,828,528.
Gasner, Lawrence L.: *See—*
Lange, K. Robert; Stern, Arthur M.; Gasner, Lawrence L.; and Hsu, Yuan Tsun, 3,829,388.
Gaston County Dyeing Machine Company: *See—*
Zeiffer, Dieter F., 3,828,410.
Gates Rubber Company, The: *See—*
Russ, Paul E., Sr., 3,829,055.
Gathright, Jack G.; and Park, Richard E., to Westinghouse Electric Corporation. Method and circuit for calculating the square root of the sum of two squares. 3,829,671, Cl. 235-158.000.
Gauch, Hermann: *See—*
Von Hagen, Wolf-Rudiger; and Gauch, Hermann, 3,828,704.
Gautherin, George A., to Lambda Electronics Corporation. Circuit for reducing the direct current component of an alternating current output signal. 3,829,794, Cl. 331-113.00a.
Gazzola, Eles: *See—*
Gazzola, Ivaldo, deceased; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,828,672.
Gazzola, Ivaldo, deceased; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,828,673.
Gazzola, Ivaldo, deceased (by Gazzola, Eles; and Gazzola, Lanfranco; heirs); D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., to American Bank Note Company. Apparatus for fitting flexible printing plates and rigging to printing press cylinders. 3,828,67, Cl. 101-247.000.
Gazzola, Ivaldo, deceased (by Gazzola, Eles; and Gazzola, Lanfranco; heirs); D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., to American Bank Note Company. Paper feed machanism for cylinder press. 3,828,673, Cl. 101-232.000.
Gazzola, Lanfranco: *See—*
Gazzola, Ivaldo, deceased; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,828,672.
Gazzola, Ivaldo, deceased; D'Amato, Salvatore F.; and Foote, Chauncey P., Jr., 3,828,673.
Gebrueder Buehler AG: *See—*
Gmuer, Bruno A., 3,828,984.
Gee-Dee International, Inc.: *See—*
Alvarez, Guillermo Diaz, 3,828,859.
GEHAP Gesellschaft fur Handel und Patentverwertung mbH & Co., KG: *See—*
Schweikart, Horst, 3,829,719.
Geiger, Ervin D. Flying saucer. 3,828,466, Cl. 46-74.00d.
Geiger, Willard L., to Erico Products, Inc. Pulse coded railway signal system. 3,829,682, Cl. 246-125.000.
Geiser, Hans; and Tessendorf, Gunter, to Licentia Patent-Verwaltungs GmbH. Connecting element for conductors. 3,829,822, Cl. 339-98.000.
Geltenpoth, Ulrich: *See—*
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General Crude Oil & Minerals Company, S.A.: *See—*
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General Electric Company: *See—*
Bottone, Salvatore, Jr., 3,829,751.
Buice, Joel B.; and Schwenker, David G., 3,828,423.
Corman, James C.; and Walmet, Gunnar E., 3,828,849.
Frazier, Lauren, 3,828,568.
Giegerich, Bertrand V., 3,829,810.
Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and Atre, John D., 3,829,786.
Hunter, Richard F.; and Mietz, Gerhard O., 3,829,546.
Jenkins, Thomas E., 3,829,191.
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Wilson, Arthur C., 3,828,763.
General Foods Corporation: *See—*
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General Instrument Corporation: *See—*
Lipsky, Stephen E., 3,829,863.
Sfreddo, Alfred, 3,828,613.
General Motors Corporation: *See—*
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General Refractories Company: *See—*
Farrington, Grant M., Jr.; and Treffner, Walter S., 3,829,541.
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Abrams, Aubrey Leon, 3,829,093.
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General Tire Company, The: *See—*
Britton, James E.; and Welch, John A., 3,829,229.
Genzer, Jerome D.; and Conrad, George A., to Warner-Lambert Company. Process for preparing 5-hydroxy-1-tetralone. 3,829,498, Cl. 260-590.000.
Gerhardt, Ralph August: *See—*
Fickle, J. Clark; and Gerhardt, Ralph August, 3,828,532.
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Gerstenberger, Roland W.; and Heater, Charles P., to Jensen Machinery Inc. Small piece folder. 3,829,081, Cl. 270-66.000.
Gerwick, Ben C., Jr.; Talbo, William J., Jr.; Hughes, Keith E.; and Brown, Arnold L. Modular prestressed concrete marine vessels and method of making same. 3,828,708, Cl. 114-65.00a.
Geula, John H. Plastic-lens cutter. 3,828,648, Cl. 90-13.300.
Giegerich, Bertrand V., to General Electric Company. Bushing, fuse and fuseholder. 3,829,810, Cl. 337-202.000.
Gilbert, Richard L.: *See—*
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Gilbreth Company: *See—*
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Gill, John Patrick, to Hydrotile Machinery Company. Concrete pipe machine with triangular frame. 3,829,268, Cl. 425-262.000.
Gioia, Louis M.; Ellsworth, Charles; and Webb, James L. Balanced maze game apparatus. 3,829,096, Cl. 273-110.000.
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Giros, Jean-Loup: *See—*
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Giroud, Germain. Head with lips movable by rods eccentrically mounted to a wheel. 3,828,469, Cl. 46-245.000.
Glass Lined Water Heater Co., The: *See—*
Stein, Robert E., 3,828,847.
Glass, Marvin & Associates: *See—*
Licitis, Gunars, 3,829,207.
Glass, Marvin I.: *See—*
Morrison, Howard J.; and Glass, Marvin I., 3,828,462.
Glatzel, Harmut; and Langen, Herbert, to Eberspacher, J. Auxiliary starter for diesel engines. 3,828,755, Cl. 123-179.00h.
Glay, Guy-Paul, to Societe d'Applications Generales d'Electricite et de Mecanique. Coding keyboard. 3,828,910, Cl. 197-98.000.
Glindmeyer, Friedrich; Limpens, Karl; and Hennenberg, Wilhelm, to William Prym-Werke KG, Firma. Apparatus for manufacturing sliding clasp fasteners having coupling links woven into the edge of a supporting tape. 3,828,825, Cl. 139-35.000.
Glos, Edmond A. II, to Davis Water & Waste Industries, Inc. Element two-way valve having freely pivotable valve. 3,828,806, Cl. 137-111.000.
Glushko, Mikhail Fedorovich; and Pakhomov, Ilia Fedorovich. Luffing crane. 3,828,938, Cl. 212-3.000.
Gmuer, Bruno A., to Gebrueder Buehler AG. Silo draining device. 3,828,984, Cl. 222-196.000.
Gochandour, Carroll Q.; and Depauw, Richard A., to International Harvester Company. Crop-diverting shed bar and bearing protector for axial flow-type combines. 3,828,794, Cl. 130-27.00t.
Gochanour, Caroll Q., to International Harvester Company. Crop feeding mechanism for axial flow combines. 3,828,793, Cl. 130-27.00t.
Goering, Dan H., 1/2 to Peterson Machine Tool, Inc. Rotary fluid engine. 3,829,257, Cl. 418-36.000.
Goeth, Hanns: *See—*
Schroder, Ludwig; Thomas, Klaus; and Goeth, Hanns, 3,829,426.
Goetz, Jerry E., to Picker Corporation. X-ray apparatus with improved film cassette clamping and size sensing means. 3,829,698, Cl. 250-468.000.
Gogolina, Tatyana Viktorovna: *See—*
Bykov, Alexandr Vasilievich; Scherbakov, Vsevolod Sergeevich; Sudarkin, Lev Alexandrovich; and Pavlov, Roman Vladimirovich, 3,829,255.
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Goldfarb, Adolph E.: *See—*
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Goldfarb, Adolph E.; Everitt, Delmar K.; Chesley, Ronald F.; and Baer, Ralph H., to Goldfarb, Adolph E. and Sanders Associates, Inc. Dart having multiple detachable tips Method of employing a television receiver for active participation in a simulated shooing game. 3,829,094, Cl. 273-95.00r.

Goldman, David A. Record transcriber adaptively responsive to typing activity. 3,829,621, Cl. 179-100.10r.

Gomes, John M.; and Uchida, Kenji, to United States of America, Interior. Process for smelting ilmenite to produce pig iron and titania-containing slag. 3,829,309, Cl. 75-1.000.

Goncharov, Evgeny Andreevich: *See—*
Marbukh, Veniamin Anatolievich; Lychak, Veniamin Samuilovich; and Goncharov, Evgeny Andreevich, 3,829,704.

Gonsalves, Joseph E. Aerial bomb and optical light beam guidance system therefor. 3,829,047, Cl. 244-3.160.

Goodbar, Reid C.; and Pressley, Arther Mitchell, to Riegel Textile Corporation. Antistatic yarn. 3,828,543, Cl. 57-140.0by.

Goodell, Gerald W., to Du Pont de Nemours, E. I., and Company. Corrosion resistant primer composition containing zinc borate pigment. 3,829,395, Cl. 260-22.00a.

Goodin, James J.; and Dowling, Matthew M., to Educational Electronics, Inc. Headset and method of making it. 3,829,624, Cl. 179-156.00r.

Goodridge, William C., to Electrostatic Equipment Corporation. Electrostatic fluidized bed. 3,828,729, Cl. 118-634.000.

Goodyear Tire & Rubber Company, The: *See—*
Crossman, Richard L., 3,828,894.
Rouf, Edgar J.; and Booher, Harold R., 3,829,167.

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Gorman, Walter M. Device for releasable gripping article. 3,828,402, Cl. 24-81.0ph.

Goto, Kenya, to Tokyo Shibaura Electric Co., Ltd. Apparatus for detecting gases or corpuscles by light absorption and scattering. 3,829,694, Cl. 250-339.000.

Gotoh, Miyuki; Mizuno, Yukio; and Shibata, Kazuo, to Nissan Motor Company, Limited. Weft inserting arrangement of fluid-jet loom. 3,828,829, Cl. 139-127.00p.

Gottleib, Herbert; and Guthart, Frank, to Instrumed Products, Inc. Cardiographic tracing cutting unit. 3,828,640, Cl. 83-464.000.

Gottlieb, Carl R.; and Campbell, Robert N., Jr., to Sea-Land Service, Inc. Spreader bar extension. 3,829,145, Cl. 294-81.0sf.

Gottschalk, Charlotte H., 20% to Lee, Raymond Organization, Inc., The. Plastic foam bell for a baby carriage. 3,828,888, Cl. 181-33.00r.

Gotz, Werner: *See—*
Schnaibel, Eberhard; and Gotz, Werner, 3,829,168.

Gouirand, Rene, to Mercadante, Joseph. Combined vehicle chassis and air suspension system. 3,829,118, Cl. 280-106.50r.

Goyer, Ronald Bruce, to RCA Corporation. Wide range monstable multivibrator circuit having a constant current source. 3,829,716, Cl. 307-273.000.

Grabhorn, Robert H.; and Westcott, Norman A., to Westcott & Grabhorn, Ltd. Insulator device. 3,828,967, Cl. 220-23.860.

Grace, W. R., & Co.: *See—*
Newcomer, Keith E., 3,829,129.

Grady, Michael J., 1/3 interest to Marshall A. Binder. Toilet seat retainer. 3,828,395, Cl. 16-137.000.

Graff, Robert Martin, to Rohm & Haas Company. Additive for impact modified thermoplastics. 3,829,531, Cl. 260-859.000.

Graham, Robert G.; and Frame, Goudlas J. Boiler tube shielding wall. 3,828,735, Cl. 122-6.00a.

Grand Haven Stamped Products Company: *See—*
Bruhn, Max R. C., Jr., 3,828,625.

Grano, James V., to Tools and Production, Inc. Rotary punch. 3,828,632, Cl. 83-345.000.

Grant, John William; and Cox, Gordon John, to International Nickel Company, The. Addition alloys. 3,829,311, Cl. 75-122.000.

Grant, Norman H.: *See—*
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Graser, Adalbert, to Steiger A.G. Folding box. 3,829,004, Cl. 229-33.000 [7 01/04/73.

Gravicast Patentverwertungsgesellschaft m.b.H.: *See—*
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Graybill, Howard W., to I-T-E Imperial Corporation. Tee connection for high voltage, high pressure oil, pipe type cables. 3,829,642, Cl. 200-148.00r.

Green, Charles R.: *See—*
Schumacher, Joseph N.; and Green, Charles R., 3,828,795.

Green, Ellis J., to Stone & Webster Engineering Corporation. Process for removing acid gases from a gas stream. 3,829,521, Cl. 260-677.00a.

Green, John S.; Luttrell, John E.; and Schmitz, James E., to Carborundum Company, The. Media for wound filter elements. 3,828,934, Cl. 210-457.000.

Green, Martin. Annular seal. 3,829,104, Cl. 277-29.000.

Green, Michael J.; and Bisarya, Satish C., to Schering Corporation. Process for the manufacture of 3-keto-6-azido 4, 6-bis-dehydro steroids and intermediates useful therein. 3,829,416, Cl. 260-239.55r.

Greenfield, Stanley A.: *See—*
Miller, George A.; and Greenfield, Stanley A., 3,829,492.

Gregory, Charles F.: *See—*
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Grell, Wolfgang: *See—*
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Grenendaal, Gradus Cornelis; Cool Hans; DeVos, Jacob; and Van Zuuren, Eduard Willem. Generator for generating a number of selected frequencies. 3,829,783, Cl. 328-14.000.

Grieb, Dale Christian: *See—*
Rosenthal, Fracis Joseph, Jr.; and Grieb, Dale Christian, 3,829,722.

Grinberg, Valery Yakovlevich: *See—*
Tolstoguzov, Vladimir Borisovich; Izjumov, Dmitry Borisovich; Grinberg, Valery Yakovlevich; Marusova, Alla Nikolaevna; and Chekhovskay, Violettateofilovna, 3,829,587.

Griss, Gerhart: *See—*
Kutter, Eberhard; Griss, Gerhart; Grell, Wolfgang; and Kleemann, Manfred, 3,829,574.

Grommes, Helmut: *See—*
Kron, Heinz; and Grommes, Helmut, 3,829,031.

Gross, Frank R. Scroll roll. 3,828,998, Cl. 226-192.000.

Gross, John, to Gulf & Western Manufacturing Company. Wrapping roll adjustment for a strip coiling machine. 3,828,598, Cl. 72-148.000.

Gross-Given Mfg. Company: *See—*
Van Meter, Edmin L., 3,828,905.

Groupement Atomique Alsacienne Atlantique: *See—*
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Grunleitner, Hans; Kuhnlein, Hans; and Liska, Manfred, to Siemens Aktiengesellschaft. Transistor switching circuit arrangement for an inductive D-C circuit. 3,829,708, Cl. 307-202.000.

Grunwell, Joyce F.: *See—*
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Gruppo Lepetit S.p.A.: *See—*
Maggi, Nicola; and Cricchio, Renato, 3,829,417.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Caithamer, George J.; Coleman, Ivan V.; and Lee, David K. K., 3,829,617.
Macrander, Max S., 3,829,790.
Tripsas, Trifon P., 3,829,628.

GTE Sylvania Incorporated: *See—*
Alfrich, Floyd E.; and Hovey, Fred A., 3,829,804.
Westlund, Arnold E., Jr.; Palmer, Lewis H., III; Audesse, Emery G.; and Huston, Leroy S., 3,829,729.

Guadagni, Dante G.; and Buttery, Ron G., to United States of America, Agriculture. Method of imparting fatty-fried flavor to foods and composition. 3,829,582, Cl. 426-65.000.

Guardian Electric Manufacturing Company: *See—*
Collette, Richard L., 3,829,802.

Gubler, Michel: *See—*
Feiner, Maria; Gubler, Michel; and Guillon, Joseph, 3,829,394.

Gudden, Friedrich; and Schubert, Wolfgang, to Siemens Aktiengesellschaft. Inlet screen for an electronic optical image amplifier and method of making it. 3,829,728, Cl. 313-101.000.

Guetersloh, John W., to Tyco Laboratories, Inc., mesne. Proximity detector. 3,829,850, Cl. 340-258.00c.

Guglhor, Peter: *See—*
Huber, Walther; Hagen, Heinz; and Guglhor, Peter, 3,829,316.

Guillon, Joseph: *See—*
Feiner, Maria; Gubler, Michel; and Guillon, Joseph, 3,829,394.

Gulf & Western Industries, Inc.: *See—*
De Lille, Richard A.; and Erickson, Frederick E., 3,828,616.

Gulf & Western Manufacturing Company: *See—*
Gross, John, 3,828,598.

Gunther, Fritz; and Fritz, Hermann, to SKF Industrial Trading and Development Company B.V. Combined axial radial bearing. 3,829,181, Cl 308-174.000.

Gustav Wagner Machinenfabrik: *See—*
Orendi, Roderich, 3,828,642.

Guthart, Frank: *See—*
Gottleib, Herbert; and Guthart, Frank, 3,828,640.

Gutowski, Chester L.: *See—*
Smith, Richard A.; and Gutowski, Chester L., 3,828,833.

Guttinger, Heinrich, to Aginfor AG fur Industrielle Forschung. Displacement machine. 3,829,256, Cl. 418-5.000.

Gygli, Walter: *See—*
Hanni, Eduard; and Gygli, Walter, 3,829,074.

Gyulai, Zoltan: *See—*
Galgoczy, Gabor; Gyulai, Zoltan; Palagyi, Tivadar; and Wagensommer, Jozsef, 3,828,515.

H & M Vibro, Inc.: *See—*
Haverkamp, Edwin; and Morren, George J., 3,828,864.

H. R. Electronics Company: *See—*
Levasseur, Joseph L., 3,828,903.

Ha, In W.; and Fravel, John C., to Xerox Corporation. Techniques for maintaining substantially constant tension in web. 3,829,745, Cl. 318-7.000.

Hackenbert, Robert A.; Tyrseck, Walter J.; and Berry, Chapman, to Robertson Paper Box Company, Inc. Folding container with folding closure ends. 3,829,005, Cl. 229-39.00r.

Haenisch, Renate: *See—*
Schadlich, Gunther; Haenisch, Renate; and Moraw, Roland, 3,829,315.

Hafner, Claude J.; and Bush, Bruce D., to Bethlehem Steel Corporation. Destruction resistant tag. 3,828,454, Cl. 40-27.000.

Hafner, Raymond A.: *See—*
Braen, H. Peter; and Hafner, Raymond A., 3,829,080.

Hagen, Heinz: *See—*
Huber, Walther; Hagen, Heinz; and Guglhor, Peter, 3,829,316.

Hahner, Reinhard: *See—*
Bleicher, Manfred; Falchle, Jorg; Hahner, Reinhard; Hansel, Gernot; Schmid, Wolfgang; and Wanner, Karl, 3,828,863.

Hailstone, Victor L.; Harper, Ronald N.; and Oliver, Wilfred T., to Ford Motor Company. Air valve carburetor with engine starting fuel enrichment means. 3,829,069, Cl. 261-44.00r.

Hain, Paul O., to Champion International Corporation. Cast coating with improved speed and quality. 3,829,325, Cl. 117-64.00c.

Haino, Kozo: *See—*
Futaki, Kiyoshi; Haino, Kozo; and Kohmura, Isao, 3,829,401.

Halasa, Adel F.; and Snyder, Dennis L., to Firestone Tire & Rubber Company, The. Purification of phosphazene monomer. 3,829,554, Cl. 423-300.000.

Haley, Paul H.; and Enns, Mark K., to Westinghouse Electric Corporation. D.C. analog calculator for rapidly generating electric power system loadflow solutions. 3,829,669, Cl. 235-151.210.

Halik, Joseph J.: *See—*
Finucane, Thomas P.; and Halik, Joseph J., 3,829,588.

Hall, Howard T., to Megadiamond Corporation. Method of making a unitary polycrystalline diamond composite and diamond composite produced thereby. 3,829,544, Cl. 264-125.000.

Hall, John B.; and Vock, Manfred, to International Flavors & Fragrances, Inc. Novel di-lower alkyl and lower alkylene acetals of 2- and 3-phenyl-pentenals. 3,829,504, Cl. 260-611.000.

Hall, Richard W.: *See—*
Curtiss, Lawrence F.; and Hall, Richard W., 3,828,790.

Haller, Hans: *See—*
Brodbeck, Helmut; and Haller, Hans, 3,828,658.

Hama, Tetsuro, to Kabushiki Kaisha Suwa Seikosha. Frequency divider circuit incorporating presetting means. 3,829,712, Cl. 307-225.00c.

Hamabe, Takeshi; and Suzuki, Takashi, to Matsushita Electric Industrial Co., Ltd. Continuous anodic oxidation method for aluminum and alloys thereof. 3,829,364, Cl. 204-28.000.

Hamada, Seiya: *See—*
Miyata, Takeo; Hamada, Seiya; Inoue, Katsuaki; and Baba, Mikito, 3,829,799.

Hamel, Stephen D., to United States of America, Atomic Energy Commission. Mixing rotor for fast analyzer of rotary cuvette type with means for enhancing the mixing of sample and reagent liquids. 3,829,223, Cl. 356-246.000.

Hamilton, Thomas. Tool for gripping and performing work operations on building materials and the like. 3,829,231, Cl. 408-108.000.

Hamma, Gerhard, to Machinenfabrik Spaichingen GmbH. Device for storing pre-selected patterns for circular knitting machines having a plurality of systems. 3,828,583, Cl. 66-50.00r.

Hammacher, Konrad: *See—*
Burkhardt, Franz; and Hammacher, Konrad, 3,829,771.

Hammann, Ingeborg: *See—*
Zumach, Gerhard; Kuhle, Engelbert; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,829,437.

Hammerle A.G., Maschinenfabrik: *See—*
Hanni, Eduard; and Gygli, Walter, 3,829,074.

Hampton, Quentin L.; and Matras, Edward J., to FMC Corporation. Plant for wastewater treatment. 3,828,933, Cl. 210-195.000.

Han, Shu-Tang: *See—*
Thompson, Norman S.; Nicholls, Gordon A.; and Han, Shu-Tang, 3,829,357.

Hanawa, Masaaki: *See—*
Okada, Senry; Hanawa, Masaaki; Ohoka, Mitsuo; Nagawa, Seishichiro; and Nawa, Toshio, 3,829,273.

Hancock, Bruce Jay. System for raising and using water. 3,829,246, Cl. 417-121.000.

Hanley, Robert F.: *See—*
Charest, Kenneth; Hanley, Robert F.; and Ornstein, Jacob L., 3,829,296.

Hannah, Eric D., to Chevron Research Company. Alkylphenol disulfonation process. 3,829,470, Cl. 260-512.00r.

Hannes, Karl, to Coats & Clark, Inc. Method for forming a cast hinge. 3,828,406, Cl. 29-11.000.

Hanni, Eduard; and Gygli, Walter, to Hammerle A.G., Maschinenfabrik. Work-table on machines for processing metal. 3,829,074, Cl. 267-130.000.

Hanotier, Jacques D. V.; and Hanotier-Bridoux, Monique G. S., to Laboratoires Roussel-Uclaf S.A. Process for the oxidation of quinoline. 3,829,432, Cl. 260-295.50r.

Hanotier-Bridoux, Monique G. S.: *See—*
Hanotier, Jacques D. V.; and Hanotier-Bridoux, Monique G. S., 3,829,432.

Hans, Paul. Quick change wheel assembly. 3,829,163, Cl. 301-9.0dn.

Hansel, Gernot: *See—*
Bleicher, Manfred; Falchle, Jorg; Hahner, Reinhard; Hansel, Gernot; Schmid, Wolfgang; and Wanner, Karl, 3,828,863.

Hansen, Ove Emil: *See—*
Damgaard-Iversen; Hansen, Ove Emil; and Lund, Bjorn, 3,828,837.

Hansen, Theodore E.; and Moran, Thomas M., to Anaconda Company, The. Power cable with grounding conductors. 3,829,603, Cl. 174-115.000.

Hansson, Sture J., H.: *See—*
Ahlbom, Sten H.; and Hansson, Sture J., H., 3,829,614.

Hara, Michio: *See—*
Nara, Akinao; Hara, Michio; Kanema, Seiichi; and Kano, Minoru, 3,828,685.

Hara, Shigeyoshi; Yamada, Takeyoshi; and Yoshida, Tsunemasa, to Teijin Limited. Novel polyamideimide precursors and hardenable compositions containing the same. 3,829,399, Cl. 260-32.6nt.

Harben, Grover S., Jr., to Gainesville Machine Company, Inc. Poultry stunning apparatus. 3,828,397, Cl. 17-11.000.

Hardtmann, Goetz E.; and Ott, Hans, to Sandoz-Wander Inc., mesne. 1,4-Substituted-pyrimidin-2(1H)-ones. 3,829,422, Cl. 260-251.00r.

Hareng, Michel: *See—*
Assouline, Georges; Hareng, Michel; and Leiba, Eugene, 3,829,684.

Hargis, Charles W., to Eastman Kodak Company. Process for the catalytic vapor-phase synthesis of alkylpyridines. 3,829,428, Cl. 260-290.00p.

Harken, Russel D.: *See—*
Crutchfield, Marvin M.; and Harken, Russel D., 3,829,384.

Harkey, Andrew D. Tire changing tool. 3,828,955, Cl. 214-332.000.

Harkey, Fred W.; and Harkey, Thelma F. Spare tire mounted, motor vehicle radiator cooling apparatus. 3,828,879, Cl. 180-54.00a.

Harkey, Thelma F.: *See—*
Harkey, Fred W.; and Harkey, Thelma F., 3,828,879.

Harley, Daniel C.: *See—*
Nelson, Norman C.; and Harley, Daniel C., 3,829,676.

Harnischfeger Corporation: *See—*
Schwantes, Herbert A., 3,828,950.

Harper, Patrick H.; Gregory, Charles F.; and Fisher, Phillip R., to Brown & Williamson Tobacco Corporation. Aromatic tobacco forming process. 3,828,798, Cl. 131-145.000.

Harper, Ronald N.: *See—*
Hailstone, Victor L.; Harper, Ronald N.; and Oliver, Wilfred T., 3,829,069.

Harreton, Roland: *See—*
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Harris Automated Machinery Company, mesne: *See—*
Harris, Sterling G.; Smith, Joseph D.; McCall, David D.; Moore, Glenn S.; Hidden, William P.; and Svendsen, Noel, 3,828,398.

Harris, Sterling G.; Smith, Joseph D.; McCall, David D.; Moore, Glenn S.; Hidden, William P.; and Svendsen, Noel, to Harris Automated Machinery Company, mesne. Method and apparatus for shucking bivalves. 3,828,398, Cl. 17-74.000.

Harris-Intertype Corporation: *See—*
Hayasi, Nisiki; and Morrison, Walter C., 3,829,338.

Harrison, Clarence E., to Ford Motor Company. Reference voltage compensation for zener diode regulation circuit. 3,829,717, Cl. 307-297.000.

Harrison, John G. Golf swing training device. 3,829,102, Cl. 273-186.00a.

Hart, Cornelis Maria, to U.S. Philips Corporation. Integrated circuit comprising supply polarity independent current injector. 3,829,718, Cl. 307-304.000.

Hartl, Jiri: *See—*
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Hartman, Wyatt, to Lee, Raymond Organization, Inc., The. Screen repair machine. 3,828,832, Cl. 140-109.000.

Hartsough, Albert Charles: *See—*
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Harvey, Michael J.: *See—*
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Hashimato, Saburo, to Union Oil Company of California. Reduction of water pollution by biological denitrification. 3,829,377, Cl. 210-11.000.

Hashimoto, Norikazu; and Masuhara, Toshiaki, to Hitachi, Ltd. Semiconductor device and the method of making the same. 3,829,888, Cl. 357-41.000.

Haskins, Lewis B., to Johns-Manville Corporation. Apparatus comprising a hold-down device. 3,828,501, Cl. 52-303.000.

Hatter, Stephen L.: *See—*
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Hau, Antonin, to Ustav pro vyzkum motorvych vozidel. Torque converter. 3,828,554, Cl. 60-361.000.

Haussler, Hubert, to Beringer Hydraulik R. Beringer & Co. Control device for load-independent flow regulation. 3,828,813, Cl. 137-596.130.

Hautau, Charles F.: *See—*
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Haverkamp, Edwin; and Morren, George J., to H & M Vibro, Inc. Pile driver and extractor. 3,828,864, Cl. 173-49.000.

Hawera Probst Kommanditgesellschaft Hartmetall-Werkzeugfabrik Ravensburg: *See—*
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Hawkins, Brian Desmond: *See—*

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Hawkins, Ronald G., to Aluminum Company of America. Tension connector assembly for cable and the like. 3,829,825, Cl. 339-242.000.
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Hayasi, Nisiki; and Morrison, Walter C., to Harris-Intertype Corporation. Double facer machine heat control. 3,829,338, Cl. 156-64.000.
Haynes, Grover. Nose ornament and sachet. 3,828,577, Cl. 63-2.000.
Haynes, Harold L.; and Harvey, Michael J., to Owens-Corning Fiberglas Corporation. Method of changing surface characteristics of sized glass fibers, fibers having changeable surface characteristics. 3,829,302, Cl. 65-3.000.
Hazelett, Robert William; and Carmichael, Robert J., to Hazelett Strip-Casting Corporation. Twin-belt metal casting machine having removable core assembly including coolant applicators and back-up rollers. 3,828,841, Cl. 164-278.000.
Hazelett Strip-Casting Corporation: *See*—
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Healy, Benedict Pascal: *See*—
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Heard, Jeffery Gerald, to English Electric Company Limited, The. Alternating current dynamo electric machines. 3,829,723, Cl. 310-54.000.
Heater, Charles P.: *See*—
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Heater,Charles P., to Jensen Corporation. Textile folding apparatus. 3,828,989, Cl. 223-37.000.
Heath, William A.: *See*—
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Heden, Olle, to Euroclean AB. Washing and high pressure jet cleaning apparatus. 3,829,024, Cl. 239-310.000.
Heidelberger Druckmaschinen Aktiengesellschaft: *See*—
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Heider, Joachim; Enberlein, Wolfgang; and Engelhardt, Gunther, to Boehringer, C. H., Sohn. Therapeutic compositions and method. 3,829,570, Cl. 424-241.000.
Heilmeier, Horst Joseph. Mounting of sheet material. 3,829,054, Cl. 248-490.000.
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Heinrich, Hellmuth Carl. Iron preparation and process for its manufacture. 3,829,561, Cl. 424-44.000.
Heintz, Karl O.: *See*—
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Heisler, Raymond A. Unitary container having a hinged panel with a tray configuration. 3,828,389, Cl. 15-257.006.
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Heller, Johannes, to International Business Machines Corporation. Multilayer magnetic structure and methods of making same. 3,829,372, Cl. 204-192.000.
Hellige, Fritz, & Co., G.m.b.H.: *See*—
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Hemingway, Maurice; and Ward, Trevor, to Hotwork Limited. Heat treatment apparatus. 3,829,284, Cl. 432-183.000.
Hennenberg, Wilhelm: *See*—
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Henricksen, Evan R. Submerged litter collector. 3,828,931, Cl. 210-163.000.
Herman, Fritz. Rodent trap. 3,828,460, Cl. 43-61.000.
Herman, Joseph L., to Emily Herman Thompson. Galvanizing apparatus for wire and the like. 3,828,723, Cl. 118-63.000.
Hermanns, Jakob, to Saint-Gobain Industries. Armored flat glass and method of making it. 3,829,352, Cl. 161-57.000.
Hermanson, Terry, to Mr. Christmas, Incorporated. Collapsible artificial tree. 3,829,349, Cl. 161-24.000.
Herold, Robert Johnson, to General Tire & Rubber Company, The. Polyethers and method for making the same. 3,829,505, Cl. 260-611.00b.
Herst, Richard J., to Car Tapes Inc. Dual purpose dial mechanism. 3,828,720, Cl. 116-124.100.
Herz, Rudolf, to Hellige, Fritz, & Co., G.m.b.H. Electrocardiogram monitoring apparatus. 3,829,766, Cl. 324-77.00r.
Heselwood, James C., to Bethlehem Steel Corporation. Device for measuring elongated material. 3,828,437, Cl. 33-134.00r.
Hesston Corporation: *See*—
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Hewlett-Packard Company: *See*—
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Hickner, Richard A., to Dow Chemical Company, The. Polyetherpolythiols, method of preparation and mixtures of polythioetherpolythiols with epoxide resins. 3,829,501, Cl. 260-609.00d.
Hidden, William P.: *See*—
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Highberg, Carle W.; and Roesch, George R., to Engelhard Minerals & Chemicals Corporation. Multiple spindle cluster for sheet glass core drilling machine. 3,828,479, Cl. 51-81.00r.
Hill, Donald E.; Payne, Stanley D.; and Walker, Robert G., to Industra Products Inc. Apparatus for winding and placing coils in the slots of a stator. 3,828,830, Cl. 140-1.000.
Hill, Robert; Bliss, George D.; and Szakacs, Janos B. Reverse flow flushing apparatus for animal housing systems. 3,828,732, Cl. 119-22.000.
Hilsinger Corporation, The: *See*—
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Hingley, Colin G., to SKF Industries, Inc. Ultra high speed rolling bearing assembly. 3,829,183, Cl. 308-213.000.
Hinz, Edward W., to Tempco Industrial Heater Corporation. Electric band heaters. 3,829,657, Cl. 219-535.000.
Hioki, Kazuo; and Onoda, Michio, to Nissan Motor Company, Limited. Ignition system for an automotive engine having exhaust recirculation arrangement. 3,828,752, Cl. 123-148.0ds.
Hiramatsu, Katsuzo, to Mitsubishi Denki Kabushiki Kaisha. Quaternary stereophonic sound reproduction apparatus. 3,829,615, Cl. 179-1.0gq.
Hirasawa, Masataka; and Kawagai, Kenji, to Tokyo Shibaura Electric Co., Ltd. Logic circuit arrangement using insulated gate field effect transistors. 3,829,710, Cl. 307-205.000.
Hitachi Cable, Ltd.: *See*—
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Hobbs, L. T., to US Supply Company. Vehicle windshield assembly. 3,829,152, Cl. 296-78.000.
Hockstetter, Werner, to Siemens Aktiengesellschaft. Power control apparatus for direct-current lines. 3,829,756, Cl. 321-4.000.
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Hoesch Maschinenfabrik Deutschland Aktiengesellschaft: *See*—
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Hoffman, Robert E.; Cline, John A.; Fuselier, Christopher S.; and Atre, John D., to General Electric Company. Dynamic constraint of a control signal. 3,829,786, Cl. 328-147.000.
Hoffman-La Roche Inc.: *See*—
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Leimgruber, Willy; and Weigele, Manfred, 3,829,423.
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Hofmann, Alwin, to Mero-Werke AG. Resilient floor, especially for gymnasiums. 3,828,503, Cl. 52-393.000.
Hofstetter, Hans: *See*—
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Hohne, Rudol. Device for the distribution of gas in a liquid. 3,829,068, Cl. 261d36.00r.
Holcombe, Gordon B. Apparatus for activating a chemiluminescent wand. 3,829,678, Cl. 240-252.00r.
Holec N.V.: *See—*
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Holka, Thomas C., to Ford Motor Company. Seat belt positioner. 3,829,123, Cl. 280-150.0sb.
Holkestad, Howard P., to Marsh, J. L., Incorporated. Anti-theft packaging device. 3,828,922, Cl. 206-1.500.
Holland, Harvison C.: *See—*
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Hollins, Jesse R. Internal combustion engine crank case oil vapor condensing means. 3,828,744, Cl. 123-119.00b.
Hollins, Jesse R. Apparatus for transporting articles in the space above the outboard passenger portion of the front seat of a motor vehicle. 3,828,994, Cl. 224-42.46b.
Holloway, Frances F., executrix: *See—*
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Holloway, William P., deceased (by Holloway, Frances F., executrix). Geophysical exploration apparatus. 3,828,886, Cl. 181-118.000.
Holm, Jens Christian, to Jespersen, A., & Son International A/S. Device for connecting and disconnecting core tubes to a trolley in concrete casting machines. 3,829,265, Cl. 425-161.000.
Holm, William J., to Riggs & Lombard, Inc. Fabric treatment apparatus. 3,828,587, Cl. 68-3.00s.
Holstein & Kappert, Maschinenfabrik Phonix GmbH: *See—*
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Holtsclaw, Robert G.; and Holtsclaw, Jerrell D. Feed conveyor with selective discharge. 3,828,919, Cl. 198-160.000.
Holz, Emil, to Finckh Metalltuch-und Maschinenfabrik. Roller having a cylindrical surface of flat belts and corrugated belts. 3,829,360, Cl. 162-357.000.
Holzworth, George R. Articulated platform for hand trucks and the like. 3,829,063, Cl. 254-2.00r.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Honea, Richard P. Instrument for applying tape to a planar surface. 3,829,347, Cl. 156-577.000.
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Hope-Tronics, Limited: *See—*
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Hopkins, Walker L.; Chvatal, Leland A.; and White, William D., to Texaco Inc. Apparatus and method for controlling the level of oil in a surge drum. 3,829,376, Cl. 208-89.000.
Horgan, William J. Jr., to Blumcraft of Pittsburgh. Hinge-device and method. 3,828,394, Cl. 16-129.000.
Horgan, William J., Jr., to Blumcraft of Pittsburgh. Rolling bolt lock. 3,828,592, Cl. 70-134.000.
Horiuchi, Hideo: *See—*
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Horn, Peter; and Schuster, Ludwig, to BASF Wyandotte Corporation. Procedure for the continuous manufacture of organic isocyanates. 3,829,458, Cl. 260-453.0ph.
Horwath, Robert Otto; and Cole, Gary William, to Standard Brands Incorporated. Process for enzymatically isomerizing glucose to fructose. 3,829,362, Cl. 195-31.00f.
Hoshino, Masao; and Oka, Yuushi, to Takeda Chemical Industries, Ltd. Method for attenuation of mumps virus. 3,829,361, Cl. 195-1.300.
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Huber, Walther; Hagen, Heinz; and Guglhor, Peter, to Siemens Aktiengesellschaft. Method for the preparation of metallic layers on a substrate. 3,829,316, Cl. 96-36.00z.
Hubner, Oswald; and Benker, Horst Wilheim, to Bunker Ramo Corporation. Plug and socket connector. 3,829,820, Cl. 339-88.00c.
Hubschmann, Ejvind: *See—*
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Huddleston, Robert F., to Mallory, P. R., & Co., Inc. Make and break electrical contact. 3,829,648, Cl. 200-264.000.
Hufnagel, Robert E., to Perkin-Elmer Corporation, The. Image signal enhancement system for a scanning electron microscope. 3,829,691, Cl. 250-311.000.
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Humphrey, Dallas R. Package including disposable utensil. 3,828,999, Cl. 229-1.50c.
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Huo, Wendell Y. Slide rule with decimal point location means. 3,829,663, Cl. 235-64.300.
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Hurco Manufacturing Company, Inc.: *See—*
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Hurzeller, Rene; Vinnemann, Antonius; and Doslik, Peter, to Sulzer Brothers, Ltd. Jacquard mechanism. 3,828,826, Cl. 139-59.000.
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Hutchinson, Don W.; Kniesly, Richard A.; and Stants, Richard O., to Ko An, Inc. Speed responsive timing circuit for vehicle light operation. 3,829,828, Cl. 240-62.000.
Hutchison, Stanley O., to Chevron Research Company. Rotary tubular coupling. 3,829,134, Cl. 285-14.000.
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Huziwara, Sigehisa: *See—*
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I.C.I. America, Inc.: *See—*
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Igarashi, Ryuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Microwave oven. 3,829,649, Cl. 219-10.550.
Igwe, Godwill M. Motor vehicle bumper. 3,829,141, Cl. 293-71.00p.
Ihmels, Johannes. Band adjusting device for garments. 3,828,370, Cl. 2-322.000.

Iida, Teiji; and Yoshimura, Noboru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Reclining seat. 3,829,156, Cl. 297-216.000.
Iikawa, Mituo: *See*—
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Iizuka, Toru; Tonooka, Katsuo; Saitoh, Torahiko; and Yasuda, Isao, to Kohkoku Chemical Industry Co., Ltd. Water-proof battery case. 3,829,332, Cl. 136-173.000.
Ikegami, Akiji; and Morita, Hideo, to Daicel Ltd. Process for stabilizing propanesultone. 3,829,438, Cl. 260-327.00s.
Ikejima, Yoritaka: *See*—
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Imura, Toshinori; and Yamanaka, Akira, to Minolta Camera Kabushiki Kaisha. Single lens reflex camera provided with a shutter controlled electrically. 3,829,873, Cl. 354-156.000.
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, to Sumitomo Chemical Company. 3,4-Dihydro-2(1H)-quinazolinones and preparation thereof. 3,829,420, Cl. 260-251.0qb.
Inaba, Shigeru, to Niles Parts Co., Ltd. Current interrupter for electric cigar lighter. 3,829,812, Cl. 337-382.000.
Inada, Masami, to Aisin Seiki Kabushiki Kaisha. Anti-skid brake control system for vehicles. 3,829,169, Cl. 303-21.00f.
Industra Products Inc.: *See*—
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Industrial Nucleonics Corporation: *See*—
Eickelberg, John E.; and Rice, James S., 3,829,848.
Industrie Pirelli Societa Per Azioni: *See*—
Portinari, Giovanni; and Zagarella, Adriano, 3,829,600.
Information Identification Company, Inc.: *See*—
Freeny, Charles C., Jr., 3,829,833.
Ingersoll-Rand Company: *See*—
Simon, Karlheinz A., 3,828,943.
Inland Container Corporation: *See*—
Ellison, Donald E., 3,829,000.
Inoue, Katsuaki: *See*—
Miyata, Takeo; Hamada, Seiya; Inoue, Katsuaki; and Baba, Mikito, 3,829,799.
Institut Francais du Petrole, des Carburants et Lubrifiants: *See*—
Wauquier, Jean-Pierre; and Wiegandt, Herbert Friedrich, 3,829,293.
Institute of Paper Chemistry, The: *See*—
Thompson, Norman S.; Nicholls, Gordon A.; and Han, Shu-Tang, 3,829,357.
Instrumed Products, Inc.: *See*—
Gottleib, Herbert; and Guthart, Frank, 3,828,640.
Insulation & Ceiling Supply: *See*—
Phillips, Richard C., 3,828,506.
Integrated Photomatrix Limited: *See*—
Crowle, Brian, 3,829,711.
Intercole Automation, Inc.: *See*—
Matsuoka, James T., 3,829,067.
International Business Machines Corporation: *See*—
Bonafino, Edward J.; Gilbert, Richard L.; and Mako, John, 3,828,669.
Brock, George W.; Cannon, Maxwell R.; and Shelledy, Frank B., 3,829,896.
Burk, John L.; Hogan, Spurgeon G., Jr.; Larson, Russell H.; and McGilvray, Bruce L., 3,829,840.
Davis, Wilbur M.; and Yates, Robert E., 3,828,667.
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Kolpek, Robert Adolph; and Loiselle, James Thomas, 3,829,855.
International Computers Limited: *See*—
Priestley, Michael John; and Cornthwaite, Eric, 3,829,801.
International Flavors & Fragrances, Inc.: *See*—
Hall, John B.; and Vock, Manfred, 3,829,504.
International Harvester Company: *See*—
Gochandour, Carroll Q.; and Depauw, Richard A., 3,828,794.
Gochanour, Caroll Q., 3,828,793.
International Minerals & Chemical Corporation: *See*—
Dancy, William B., 3,829,559.
International Mobile Machines Corporation: *See*—
Blouch, Roger D., 3,829,616.
International Nickel Company, The: *See*—
Grant, John William; and Cox, Gordon John, 3,829,311.
International Telephone and Telegraph Corporation: *See*—
Short, Thomas D.; and Marcum, Donald R., 3,829,627.
Intersil Incorporated: *See*—
Canning, Michael L., 3,829,713.
Interstab Limited, mesne: *See*—
Oakes, Vincent; and Cross, David F. W., 3,829,396.
Involvo AG: *See*—
Roth, Oscar, 3,828,986.
Iosue, Michael F.; and Sanders, Robert E., to Rogers Corporation. Bus strip. 3,829,818, Cl. 339-19.000.
Iowa Manufacturing Company: *See*—
Schrimper, Vernon L., 3,829,032.
Iowa State University Research Foundation: *See*—
Quick, Graeme R., 3,828,531.
Ipco Hospital Supply Corporation, mesne: *See*—
Davis, Samuel R., Jr.; and Watson, Harry A., 3,829,350.
Ireco Industries, Inc.: *See*—
Clements, Lloyd W., 3,828,809.
Irmscher, Klaus; Kramer, Josef; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, to Merck Patent Gesellschaft mit beschrankter Haftung. 3-Aryl-benzazines. 3,829,421, Cl. 260-244.00r.
Irsin, Robert P.; and Kwartiroff, Alexander, to Datadyne Corporation. Telephone line equalizer. 3,829,626, Cl. 179-170.00r.
Isen, Allan A.: *See*—
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Ishida, Shinichi; Oshima, Noboru; Kurita, Kunio; Suzuki, Isamu; and Ohno, Hidetoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for treating aldehydes. 3,829,379, Cl. 210-18.000.
Ishii Civil Engineers Consulting Inst. Ltd.: *See*—
Miyasaki, Norihiko; Ishii, Minoru; Sakurai, Hiroji; Suzuki, Hisao; Nagatsumo, Katsuyoshi; and Furukawa, Hitoshi (said Ishii assor. to), 3,829,228.
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Ishikawa, Hisao; Osanai, Hiroshi; and Kawabata, Terutsugu, to Fujikura Cable Works Ltd. Laminated shield tape for cable and laminate sheathed cable formed by using the laminated shield tape. 3,829,602, Cl. 174-102.00r.
Ishikawa, Mineo; and Moriya, Kazuo, to Toyoda Koki Kabushiki Kaisha. Sizing system for measuring the diameter of a rotating workpeice of non-circular cross-section. 3,828,439, Cl. 33-143.001.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Nanjyo, Toshio; Aoshika, Masayuki; and Nakamura, Akinori, 3,829,595.
Ishizumi, Kikuo: *See*—
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,829,420.
Ismann, Herbert: *See*—
Pinette, Laurier A., 3,829,339.
Iso Nuclear Corp., mesne: *See*—
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Isono, Shoji: *See*—
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Itek Corporation: *See*—
Case, Laura K., 3,829,317.
Magin, Irving J., 3,829,318.
Wyant, James C., 3,829,219.
Ives, Andrew George; and Wortley, John Philip Atkinson, to Imperial Metal Industries (KYNOCH) Limited. Treatment of titanium cathode surfaces. 3,829,366, Cl. 204-105.00r.
Iwasaki Tsushinki Kabushiki Kaisha (a/k/a Iwatsu Electric Co., Ltd.): *See*—
Katow, Takehumi, 3,829,887.
Izjumov, Dmitry Borisovich: *See*—
Tolstoguzov, Vladimir Borisovich; Izjumov, Dmitry Borisovich; Grinberg, Valery Yakovlevich; Marusova, Alla Nikolaevna; and Chekhovskay, Violettateofilovna, 3,829,587.
Izumi, Yusuki: *See*—
Mizutani, Yukio; Izumi, Yusuki; and Watanabe, Yoshiaki, 3,829,495.
Jabsen, Felix S., to Babcock & Wilcox Company, The. Fuel assembly for a nuclear reactor. 3,828,868, Cl. 176-78.000.
Jackson, Alfred N. Cabinet prefabrication system. 3,829,190, Cl. 312-258.000.
Jackson Communication Corporation: *See*—
Jackson, Richard L., 3,829,064.
Jackson, Richard L., to Jackson Communication Corporation. Winch system. 3,829,064, Cl. 254-166.000.
Jagenbert-Werke AG: *See*—
Klingen, Heinrich, 3,828,633.
Jager, Lothar, to U.S. Philips Corporation. Marking device in a dictating apparatus. 3,829,898, Cl. 360-137.000.
James, Russell P., 1/4 to Bagwell, Thomas W. and 1/4 to Heim, James A. Line square. 3,828,443, Cl. 33-227.000.
Jamison, Mickey B.: *See*—
McMinn, Robert E.; and Jamison, Mickey B., 3,828,850.
Jancik, Frantisek; and Polach, Josef, to SVIT, narodni podnik. Apparatus for assembling shoe parts. 3,828,385, Cl. 12-24.500.
Jansz, Joost Werner, to Hollandsche Beton Groep N.V. Impulse driving apparatus. 3,828,866, Cl. 173-101.000.

January, Susan C.: *See*—
Bader, Henry; and January, Susan C., 3,829,443.
Janzen, Dennis W.; and Dell, Curtis G., to E. I. du Plnt de Nemours and Company. Phase lock detection and control for piezoelectric fluid analyzers. 3,828,607, Cl. 73-23.000.
Jeane, Harvey L., to California Institute of Technology. Priority interrupt system. 3,829,839, Cl. 340-172.500.
Jeannotte, Dexter A.; and Johnson, Alfred H., to International Business Machines Corporation. Interlayer interconnection technique. 3,829,601, Cl. 174-68.500.
Jefferson Chemical Company, Inc.: *See*—
Yeakey, Ernest Leon; and Moss, Philip Hotchkiss, 3,829,494.
Jehu, Victor James; and Pearson, Leonard Charles, to National Research Development Corporation. Safety device for vehicles. 3,829,140, Cl. 293-15.000.
Jelinek, Vaclav: *See*—
Jelinek, Vaclav, deceased; Semonsky, Miroslav; Hartl, Jiri; and Borovansky, Alois, 3,829,473.
Jelinek, Vaclav, deceased (by Jelinkova, Vera; and Jelinek, Vaclav; heirs); Semonsky, Miroslav; Hartl, Jiri; and Borovansky, Alois, to SPOFA, United Pharmaceutical Works. α, αDiaryl-α, β-dihalocrotonic acids. 3,829,473, Cl. 260-515.00a.
Jelinkova, Vera: *See*—
Jelinek, Vaclav, deceased; Semonsky, Miroslav; Hartl, Jiri; and Borovansky, Alois, 3,829,473.
Jenkins, Thomas E., to General Electric Company. Means for sealing a component supporting assembly in a washing appliance tub. 3,829,191, Cl. 312-346.000.
Jenne, Oswald; Steinkuhl, Josef; Wiechmann, Otto; and Reimann, Gerhard, to Rheinstahl AG. Apparatus for the production of polyphase gypsum. 3,829,280, Cl. 432-58.000.
Jensen Corporation: *See*—
Heater,Charles P., 3,828,989.
Jensen Machinery Inc.: *See*—
Gerstenberger, Roland W.; and Heater, Charles P., 3,829,081.
Jensen, Reed J.; Rice, Walter W.; and Beattie, Willard H., to United States of America, Atomic Energy Commission. Metal atom oxidation laser. 3,829,793, Cl. 331-94.50p.
Jeschke, Willi; and Pollich, Gerhard, to Heidelberger Druckmaschinen Aktiengesellschaft. Sheet feeding apparatus. 3,829,085, Cl. 271-231.000.
Jespersen, A., & Son International A/S: *See*—
Holm, Jens Christian, 3,829,265.
Jet Forwarding, Inc.: *See*—
Yarbrough, James G., 3,828,965.
Jet Medical Products, Inc.: *See*—
Krasnow, David L., 3,828,766.
Jochum, Christian: *See*—
Bartmann, Wilhelm; Alpermann, Hans-Georg; and Jochum, Christian, 3,829,572.
Johns-Manville Corporation: *See*—
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Johnson & Johnson: *See*—
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Kennette, John Wilson; and Ness, Irving Stanley, 3,828,783.
Johnson, Alfred H.: *See*—
Jeannotte, Dexter A.; and Johnson, Alfred H., 3,829,601.
Johnson, Allan S., to Topmatic Corporation. Tapping attachment adapted for numerical control. 3,829,230, Cl. 408-14.000.
Johnson, Charles A.: *See*—
Johnson, Charles A.; and Kimmel, Albert L. (said Kimmel assor. to said), 3,829,217.
Johnson, Charles A.; and Kimmel, Albert L., said Kimmel assor. to said Johnson, Charles A. Oil condition indicator. 3,829,217, Cl. 356-70.000.
Johnson, Delp W. Method of forming a multi-unit folding slab construction for use of restricted building site. 3,828,512, Cl. 52-745.000.
Johnson, Everett A.: *See*—
Silverman, Daniel; and Johnson, Everett A., 3,829,661.
Johnson, Marvin M.: *See*—
Zuech, Ernest A.; and Johnson, Marvin M., 3,829,516.
Zuech, Ernst A.; Johnson, Marvin M; and Nowack, Gerhard P., 3,829,515.
Johnson Service Company: *See*—
Nolden, William F., 3,828,556.
Johnson, Verner A. Metal layer rivetform and two layer assembly. 3,828,517, Cl. 52-758.00d.
Johnsson, Lars Bertil, to Societe Anonyme Genoud & Cie. Piezo-electric lighters. 3,829,737, Cl. 317-81.000.
Johnstone, Colin G. Control assembly for attachment to a machine tool to control threat tapping operations. 3,828,383, Cl. 10-136.00e.
Jolin, Ray L. Auxiliary rudder. 3,828,718, Cl. 115-18.00r.
Jonas, Gerald L. Demi-cubic structures. 3,829,186, Cl. 312-100.000.
Jones, Bill F., to Carroll, J. W., & Sons; a division of U.S. Industries, Inc. Lighting panel. 3,829,680, Cl. 240-106.000.
Jones, James D., to Wind Wonder, Inc. Thermostat for power ventilators and the like. 3,829,010, Cl. 236-49.000.
Jones, Len M., to Well-Saver, Inc. Non-migrating reversible male sterilization coupler. 3,828,764, Cl. 128-1.00r.
Jones, Robert A. Method of stabilizing a comparatively flat roofed structure against wind. 3,828,498, Cl. 52-173.000.
Joseph, Horace M., to United States of America, Navy. Slow modulation distance measuring apparatus. 3,829,674, Cl. 235-181.000.
Joslyn Manufacturing and Supply Company: *See*—
Petres, Stephen Anthony, 3,828,562.
Julev, Stoyan Iliev; Milkov, Mihail Yordanov; Dachev, Lyubomir Petrov; Vasilev, Rosen Petrov; Kostov, Vasil Alexandrov; and Aroyo, Jacky Sivcho, to DSO 'Textil'. Machine for producing non woven floor coverings. 3,829,344, Cl. 156-435.000.
Jung Products, Inc.: *See*—
Gamm, Paul B.; and Clare, Billy C., 3,828,785.
Junker, Ralph Daniel. Consumable explosive cartridges. 3,828,676, Cl. 102-39.000.
Jureit, John Calvin, to Automated Building Components, Inc. Structural joint and connector plate therefor. 3,828,514, Cl. 52-753.00d.
Jurny, Josef, to Adamovke Strojirny Narodni podnik. Adjustable transfer gripper cylinder. 3,829,084, Cl. 271-277.000.
Justice, Roger L.: *See*—
Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,829,305.
K. Pettersens Sonner A/S: *See*—
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K-Line Industries, Inc.: *See*—
Kammeraad, James A., 3,829,105.
K-Line Tool Company: *See*—
Kammeraad, James A.; and Kammeraad, Donald J., 3,828,415.
Kabushiki Kaisha Daini Seikosha: *See*—
Nozawa, Hideo; Aoki, Masayoshi; and Isono, Shoji, 3,828,549.
Kabushiki Kaisha Kashifuji Tekkosho (Kabushifuji Works, Ltd.): *See*—
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Kabushiki Kaisha Medica: *See*—
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Kabushiki Kaisha Ricoh: *See*—
Shiina, Toshio; and Midorikawa, Akira, 3,829,083.
Kabushiki Kaisha Suwa Seikosha: *See*—
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Hama, Tetsuro, 3,829,712.
Saito, Toshiaki; and Kobaysshi, Hisashi, 3,828,546.
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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kitano, Masao; and Kondo, Yasuo, 3,828,844.
Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Maeda, Tsuneo, 3,829,803.
Kadin, Saul B., to Pfizer Inc. Oxobenzofuran intermediates. 3,829,446, Cl. 260-343.300.
Kaelin, Bette M., to Marvin Glass & Associates. Doll. 3,828,467, Cl. 46-115.000.
Kahle Engineering Co.: *See*—
Napor, Carl A.; and Krumm, Charles G., 3,829,017.
Kakhniashvili, Avtandil Semenovich: *See*—
Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich; Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich, 3,829,042.
Kalamazoo Conveyor Company: *See*—
Becker, Roger T.; Hatter, Stephen L.; and McMullin, Donald, Jr., 3,828,920.
Kali-Chemie Aktiengesellschaft: *See*—
Rudolph, Werner; and Massonne, Joachim, 3,829,511.
Kalle Aktiengesellschaft: *See*—
Schadlich, Gunther; Haenisch, Renate; and Moraw, Roland, 3,829,315.
Kalmus, Henry P.; Goldberg, Harold; and Sanders, Milton. Low noise fuze. 3,829,859, Cl. 343-7.0pf.
Kaman Aerospace Corporation: *See*—
Flannelly, William G., 3,829,052.
Kamasako, Shoji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electric exposure meter with operational function. 3,829,865, Cl. 354-24.000.
Kamei, Tutomu: *See*—
Fujii, Masaru; Oyagi, Syuji; Kamei, Tutomu; and Mori, Inosuke, 3,828,737.
Kammeraad, Donald J.: *See*—
Kammeraad, James A.; and Kammeraad, Donald J., 3,828,415.
Kammeraad, Donald J.; and Kammeraad, James A. Method and apparatus for rebuilding valve guides. 3,828,756, Cl. 123-188.0gc.
Kammeraad, James A.: *See*—
Kammeraad, Donald J.; and Kammeraad, James A., 3,828,756.
Kammeraad, James A.; and Kammeraad, Donald J., to K-Line Tool Company. Method and apparatus for rebuilding valve guides. 3,828,415, Cl. 29-401.000.
Kammeraad, James A., to K-Line Industries, Inc. Double cup seal. 3,829,105, Cl. 277-183.000.
Kampmann, Gerhard; and Schneider, Felix, to Waggon Union GmbH. Sliding wall arrangement for covered railroad freight cars and containers. 3,828,693, Cl. 105-378.000.
Kanebo Ltd.: *See*—
Oohara, Saburo, 3,829,380.
Kaneko, Makoto: *See*—
Kurita, Seiichi; Kaneko, Makoto; and Iikawa, Mituo, 3,829,179.
Kanema, Seiichi: *See*—
Nara, Akinao; Hara, Michio; Kanema, Seiichi; and Kano, Minoru, 3,828,685.

Kanetaka, Junichi; Shimodaira, Takashi; and Mori, Shoichiro, to Mitsubishi Petrochemical Company Limited. Process for producing α-lactones and cyclic ethers. 3,829,448, Cl. 260-343.600.

Kano, Minoru: *See—*
Nara, Akinao; Hara, Michio; Kanema, Seiichi; and Kano, Minoru, 3,828,685.

Kanto Seiki Company, Limited: *See—*
Yamamoto, Yukio, 3,828,594.

Kaplan, Martin: *See—*
Rothstein, Milton; Kaplan, Martin; and Barton, Lloyd, 3,829,341.

Karaganis, James J.; and Payne, Peter R., to Wyle Laboratories, mesne. Trailing wire antenna. 3,829,861, Cl. 343-707.000.

Karatjas, Manuel: *See—*
Kuris, Arthur; Balamuth, Lewis; and Karatjas, Manuel, 3,828,770.

Karkar, Edward M; and Kovalevski, Nicolas, to Karkar Electronics, Inc. Modulator and method. 3,829,797, Cl. 332-43.00b.

Karkar Electronics, Inc.: *See—*
Karkar, Edward M; and Kovalevski, Nicolas, 3,829,797.

Karl, Horst: *See—*
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; and Schroeder, Rolf, 3,829,875.

Karlovic, Gordana: *See—*
Butula, Ivan; and Karlovic, Gordana, 3,829,493.

Kashio, Toshio, to Casio Computer Co., Ltd. Numerical value-ranking apparatus. 3,829,664, Cl. 235-92.0sh.

Kask, Eugene, to Rogers Corporation. Closure plug. 3,828,968, Cl. 220-24.500.

Kasle Steel Corporation: *See—*
Morrison, James J., 3,828,705.

Kaszupski, Stanley J., to United States of America, Army. Electric ignition element with secondary ignition capability. 3,828,677, Cl. 102-46.000.

Katada, Keiji: *See—*
Ogawa, Yoshikatsu; Katada, Keiji; Nakano, Mitsuhiro; and Yasumatsu, Kozi, 3,829,398.

Kato, Mitsukuni; Komai, Takeshi; and Aoshima, Kazuyohi, to Nippons Oil and Fats Company Limited. Process for producing organic peroxides. 3,829,503, Cl. 260-610.00r.

Kato, Tetsuya; and Ohira, Tutomu, to Toray Industries, Inc. Flame retardant polyamide fiber composition using oxy-tin compounds and process for the preparation thereof. 3,829,400, Cl. 260-37.00n.

Katow, Takehumi, to Iwasaki Tsushinki Kabushiki Kaisha (a/k/a Iwatsu Electric Co., Ltd.). Target of a cathode-ray tube. 3,829,887, Cl. 357-31.000.

Kauffman, Joel M., to I.C.I. America, Inc. Process for preparing a thiodiacyl halide. 3,829,481, Cl. 260-544.00y.

Kawabata, Terutsugu: *See—*
Ishikawa, Hisao; Osanai, Hiroshi; and Kawabata, Terutsugu, 3,829,602.

Kawagai, Kenji: *See—*
Hirasawa, Masataka; and Kawagai, Kenji, 3,829,710.

Kawamata, Yukio; Yamamoto, Keisuke; and Yamaguchi, Namio, to Matsushita Electric Industrial Co. Ltd. Stabilizing device for the synchronous detector of an AGC video feedback loop. 3,829,606, Cl. 178-5.80r.

Kawasaki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. System for recognizing patterns. 3,829,832, Cl. 340-146.30p.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nakano, Masao, 3,829,252.

Kazama, Seiji: *See—*
Matsui, Yutaka; Kazama, Seiji; and Nakabayashi, Masamitsu, 3,829,533.

Kebabian, Paul L., to Massachusetts Institute of Technology. Digital filter to realize efficiently the filtering required when multiplying or dividing the sampling rate of a digital signal by a composite integer. 3,829,670, Cl. 235-152.000.

Kel-Lite Industries, Inc.: *See—*
Nelson, Norman C.; and Harley, Daniel C., 3,829,676.

Keller, Carl H., Jr.: *See—*
Rybicki, Robert C.; and Keller, Carl H., Jr., 3,829,239.

Keller, Hans W., to Honeywell Inc. Method for batch fabricating semiconductor devices. 3,828,424, Cl. 29-583.000.

Kendall, Virgil D.: *See—*
Skriletz, Rudolph A.; and Kendall, Virgil D., 3,828,488.

Kennametal Inc.: *See—*
Woodward, Bruce C., 3,829,267.

Kennedy, John B., Jr., to Continental Can Company, Inc. Method and apparatus for electrostatic printing using triboelectric inking developers. 3,828,670, Cl. 101-114.000.

Kennette, John Wilson; and Ness, Irving Stanley, to Johnson & Johnson. Absorbent facing material. 3,828,783, Cl. 128-284.000.

Kent, Alan; and Topley, Bryan, to United Kingdom of Great Britain and Northern Ireland, Minister of Supply in Her Britannic Majesty's Government of the. Preparation of alkyldichlorophosphines. 3,829,479, Cl. 260-543.00p.

Keppler, Hans-Georg; Zuern, Ludwig; and Stahnecker, Erhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Purification of waste water from styrene bead polymer production. 3,829,378, Cl. 210-42.000.

Kern, Horstmar, to Wieland-Werke A.G. Press-fitted joint between a transom bar and a frame or sash bar for use on windows, doors or the like. 3,828,516, Cl. 52-758.00h.

Kerr, John T.: *See—*
Perloff, David S.; Kerr, John T.; and Marley, James A., 3,829,890.

Kersten, Gunter: *See—*
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Kewanee Machinery & Conveyor Co., a division of Chromalloy American Corporation: *See—*
Poland, Robert L., 3,828,860.

Kiefer, Hans: *See—*
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Kiisler, Karl Ritsovich: *See—*
Aarna, Agu Yanovich; Kiisler, Karl Ritsovich; Gerkhardovich, Peep; and Tanner, Juri Albert-Mikhaelovich, 3,829,528.

Kilcoin, John Augustine, to General Electric Company. Limit switch having mechanism to eliminate unwanted reactivation thereof. 3,829,637, Cl. 200-47.000.

Kim, Keun Young; and Shaver, Kenneth J., to Monsanto Company. Dicalcium phosphate and its method of preparation. 3,829,562, Cl. 424-57.000.

Kimmel, Albert L.: *See—*
Johnson, Charles A.; and Kimmel, Albert L., 3,829,217.

King, Arthur S. Particle collector. 3,828,526, Cl. 55-118.000.

King, Calvin E. Swinging T-square. 3,828,436, Cl. 33-88.000.

King, Geoffrey: *See—*
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Kinsolving, C. Richard: *See—*
Carr, Albert A.; Kinsolving, C. Richard; and Meyer, Donald R., 3,829,433.

Kirch, John N., to Borden, Inc., mesne. Novel printing and coating system. 3,829,323, Cl. 117-45.000.

Kiritani, Masataka: *See—*
Ozutsumi, Minoru; Miyazawa, Yoshihide; Motohashi, Katsuichi; and Kiritani, Masataka, 3,829,322.

Kiriya, Masashi: *See—*
Tsukakoshi, Osamu; and Kiriya, Masashi, 3,829,689.

Kirschner, Peter; and Rauer, Heinz Gunter, to Volkswagenwerk Aktiengesellschaft. Apparatus for static level regulation of a vehicle. 3,829,119, Cl. 280-124.00f.

Kise, Mearl A.: *See—*
Ellis, Leonard C.; and Kise, Mearl A., 3,829,358.

Kiselev, Jury Vladimirovich: *See—*
Belyaev, Viktor Borisovich; Butrova, Ekaterina Sergeevna; Kiselev, Jury Vladimirovich; and Pozharskaya, Galina Tikhonovna, 3,829,733.

Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, to Bayer Aktiengesellschaft. Combating insects, acarids and nematodes using S, S-di(2-alkoxy-ethyl-phosphoro- or phosphonothionothiolates. 3,829,565, Cl. 424-217.000.

Kitai, Kiyoshi, to Seiko Koki Kabushiki Kaisha. Camera electric shutter with mechanical delay device. 3,829,877, Cl. 95-53.0eb.

Kitano, Masao; and Kondo, Yasuo, to Nippondenso Co., Ltd., Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho. Heat exchanging apparatus. 3,828,844, Cl. 165-8.000.

Klauke, Erich: *See—*
Buttner, Gerhard; and Klauke, Erich, 3,829,460.

Klee, Maurice, to Case, J. I., Company. Compact material-handling loader. 3,828,952, Cl. 214-140.000.

Kleemann, Manfred: *See—*
Kutter, Eberhard; Griss, Gerhart; Grell, Wolfgang; and Kleemann, Manfred, 3,829,574.

Klehm, William G., Jr., to Burroughs Corporation. Protective environment for keyboard actuatable switches. 3,829,632, Cl. 200-5.00a.

Klein, Konrad, to Zinser-Textilmaschinen GmbH. Installation for transporting spools. 3,828,682, Cl. 104-91.000.

Kleinewefers Industrie-Compagnie GmbH: *See—*
Scheunemann, Hans-Rudiger, 3,829,277.

Kleinhaut, Samuel, to Bagprint Lts. One piece collapsible paper box. 3,829,001, Cl. 229-16.00a.

Kleinhaut, Samuel, to Bagprint Ltd. One piece collapsible paper box. 3,829,002, Cl. 229-16.00a.

Klingen, Heinrich, to Jagenbert-Werke AG. Method and apparatus for slitting materials such as aluminum or the like. 3,828,633, Cl. 83-56.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Deussner, Herbert, 3,829,282.
Finsterwalder, Gerhard, 3,828,739.

Kloosterhouse, George. Masking fluid applicator. 3,829,224, Cl. 401-130.000.

Klug, Robert F.; and Lindquist, Larry B., to Dale Electronics, Inc. Potentiometer. 3,829,813, Cl. 338-180.000.

Knapp, Heinrich, to Robert Bosch GMBH. Fuel injection apparatus. 3,828,749, Cl. 123-139.00e.

Knapsack Aktiengesellschaft: *See—*
Ohorodnik, Alexander; Sennewald, Kurt; Hundeck, Joachim; and Stutzke, Paul, 3,829,478.

Knecht Filterwerke Gesellschaft mit beschraenkter Haftung: *See—*
Frey, Gunter; Hoflacher, Arthur Nikolaus; and Ebing, Walter, 3,828,529.

Kniesly, Richard A.: *See—*
Hutchinson, Don W.; Kniesly, Richard A.; and Stants, Richard O., 3,829,828.

Knodel, Emil: *See—*
Aldinger, Ulrich; Kersten, Gunter; and Knodel, Emil, 3,828,653.

Kny, Hermann: *See—*
Sieber, Alexander; Kny, Hermann; and Oliver, Ward H., 3,829,496.

Ko An, Inc.: *See—*

Hutchinson, Don W.; Kniesly, Richard A.; and Stants, Richard O., 3,829,828.

Kobayashi, Norio: *See—*
Suzuki, Shigeyoshi; Kobayashi, Norio; and Shimizu, Kazuo, 3,829,319.

Kobaysshi, Hisashi: *See—*
Saito, Toshiaki; and Kobaysshi, Hisashi, 3,828,546.

Kobetz, Paul; and Lindsay, Kenneth L., to Ethyl Corporation. Reactions of alkyl sultones with halide salts in aqueous systems. 3,829,471, Cl. 260-513.00r.

Kobulia, Georgy Samsonovich: *See—*
Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich; Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich, 3,829,042.

Koch, Christian, to Siemens Aktiengesellschaft. Method and apparatus for operating combustion engines. 3,828,736, Cl. 123-3.000.

Koch, Edwin: *See—*
Schellhorn, Walter; and Koch, Edwin, 3,828,906.

Koch, Paolo: *See—*
Perrotti, Emilio; and Koch, Paolo, 3,829,457.

Koch, Roland G., to Houdaille Industries, Inc. Tool holder with spring operated nut. 3,829,109, Cl. 279-91.000.

Kochs Adler, AG: *See—*
Sugland, Wolfgang; and Kochs Adler, AG, 3,828,703.

Kockum Industries Incorporated: *See—*
Roderick, Olsen, Jr., 3,828,928.

Kocsis, Louis L.: *See—*
Buch, Roman; Kocsis, Louis L.; and Sadove, Max S., 3,828,773.

Koehler, Dale R., to Bulova Watch Company, Inc. Incrementally-adjustable regulator for nuclear pulse generator. 3,829,697, Cl. 250-370.000.

Koehler-Dayton, Inc.: *See—*
Cornish, Alan H.; Foster, George W.; and Campbell, Alexander J., 3,828,372.

Koehring Corporation: *See—*
Briggs, Eugene C.; and Wellbaum, William C., 3,829,281.

Koepp Aktiengesellschaft: *See—*
Remmert, Hans-Jurgen, 3,829,343.

Koering Company: *See—*
Wallenfang, Jerome A.; and Witt, Wilmer E., 3,829,030.

Kohashi, Tadao, to Matsushita Electric Industrial Company. Variable capacitance device. 3,829,743, Cl. 357-23.000.

Kohashi, Tadao, to Matsushita Electric Industrial Company, Limited. Variable capacitance device. 3,829,881, Cl. 357-23.000.

Kohkoku Chemical Industry Co., Ltd.: *See—*
Iizuka, Toru; Tonooka, Katsuo; Saitoh, Torahiko; and Yasuda, Isao, 3,829,332.

Kohl, Karl. Tension bar for warp knitting machine. 3,828,586, Cl. 66-146.000.

Kohmura, Isao: *See—*
Futaki, Kiyoshi; Haino, Kozo; and Kohmura, Isao, 3,829,401.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Muratani, Takuro; Saito, Hideki; and Watanabe, Tatsuo, 3,829,777.
Watanabe, Teruji; Fukui, Takasuke; and Suzuki, Shizuo, 3,829,894.

Kolpek, Robert Adolph; and Loiselle, James Thomas, to International Business Machines Corporation. Typing system with form programmed format control. 3,829,855, Cl. 340-172.500.

Komai, Takeshi: *See—*
Kato, Mitsukuni; Komai, Takeshi; and Aoshima, Kazuyohi, 3,829,503.

Komine, Isamu: *See—*
Usi, Genichi; and Komine, Isamu, 3,828,596.

Kondo, Yasuo: *See—*
Kitano, Masao; and Kondo, Yasuo, 3,828,844.

Koon, Billy W.; and Sylvester, Alfred Glenn 5Combination jack, anchor and hold-down apparatus. . 3,828,491, Cl. 52-23.000.

Kopp, Eugen, to Werner & Pleiderer. Device for uniformly adjusting the moisture content in a compacted mass. 3,828,444, Cl. 34-70.000.

Kopp, Gerhard, to Messerschmitt-Bolkow-Blohm GmbH. Jet deflector for V/stol-aircraft. 3,829,021, Cl. 239-165.350.

Kornis, Gabriel; and Nidy, Eldon G., to Upjohn Company, The. Oxime substituted carbanilates. 3,829,463, Cl. 260-471.00c.

Kornis, Gabriel; and Nidy, Eldon G., to Upjohn Company, The. Benzoldoxime-meta-carbamates. 3,829,464, Cl. 260-471.00c.

Korodi, Miklos. Applicator apparatus for depilatory composition. 3,828,724, Cl. 118-258.000.

Korolev, Oleg Alexandrovich: *See—*
Turchaninov, Vasily Vasilievich; Shelkovnikov, Jury Petrovich; Machkov, Gennady Maximovich; and Korolev, Oleg Alexandrovich, 3,828,944.

Koshiba, Masao: *See—*
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,829,420.

Kosinov, Vyacheslav Georgievich: *See—*
Larjukhin, Grigory Artemovich; Chernyshev, Valentin Vasilievich; Nikitin, Vladislav Iosifovich; Serikov, Jury Mitrofanovich; and Kosinov, Vyacheslav Georgievich, 3,828,560.

Koss, Vernon J.: *See—*
Lund, Robert S.; and Koss, Vernon J., 3,828,840.

Kostov, Vasil Alexandrov: *See—*
Julev, Stoyan Iliev; Milkov, Mihail Yordanov; Dachev, Lyubomir Petrov; Vasilev, Rosen Petrov; Kostov, Vasil Alexandrov; and Aroyo, Jacky Sivcho, 3,829,344.

Kovalevski, Nicolas: *See—*
Karkar, Edward M; and Kovalevski, Nicolas, 3,829,797.

Koyama, Mitsuo: *See—*
Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, 3,829,878.

Koyo Electronics Industry Co., Ltd.: *See—*
Fujioka, Katsuichi, 3,829,599.

Kozhaev, Arkady Filippovich: *See—*
Olshansky, Nikolai Alexandrovich; Smelyansky, Matvei Yakovlevich; Lopatko, Anatoly Petrovich; Tkachev, Leonid Grigorievich; Kozhaev, Arkady Filippovich; Sapozhnikov, Alexandr Ivanovich; and Chernakov, Gennady Anatolievich, 3,829,651.

Kraemer, Erich Henry: *See—*
Whelehan, James J. Jr.; and Kraemer, Erich Henry, 3,829,787.

Kramer, Josef: *See—*
Irmscher, Klaus; Kramer, Josef; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,829,421.

Krasnov, Mikhail Mikhailovich; Stelmakh, Mitrofan Fedorovich; Malyshev, Boris Nikolaevich; Prozorov, Vladimir Nikolaevich; Saprykin, Pavel Ivanovich; and Batrukova, Maria Grigorievna. Laser Opthalmoscope. 3,828,788, Cl. 128-303.100.

Krasnow, David L., to Jet Medical Products, Inc. Disposable medical electrode. 3,828,766, Cl. 128-2.10f.

Kravetz, Louis, to Shell Oil Company. Process of removing polyvinyl alcohol size from fabrics with hydrogen peroxide. 3,829,291, Cl. 8-138.000.

Kreha Corporation of America: *See—*
Omori, Thomas T.; and Imaoka Hiroshi, 3,829,327.

Kreissig, Ernst Florian, to Schweizerische Lokomotiv-une Maschinenfabrik. System for transmitting traction and braking forces in a rail vehicle. 3,828,692, Cl. 105-65.000.

Kreusel, Ulrich. Connector assemblies for hollow members. 3,829,226, Cl. 403-295.000.

Kreutze, Gerhard: *See—*
Soehring, Gerhard; Moessner, Manfred; Kreutze, Gerhard; and Obstfelder, Guenther, 3,829,206.

Krimm, Heinrich; Freitag, Dieter; and Boie, Immo, to Farbenfabriken Bayer Aktiengesellschaft. Anthranilic acid esters nuclearly substituted with optionally substituted phenyl-alkyl. 3,829,462, Cl. 260-471.00r.

Krishna, Surinder, to Westinghouse Electric Corporation. Schottky barrier plasma thyristor circuit. 3,829,880, Cl. 357-15.000.

Krivobokov, Vladimir Nikolaevich: *See—*
Borisenko, Gleb Pavlovich; Chernobrivenko, Jury Sergeevich; Kutsov, Jury Georgievich; Gorbanev, Arkady Alexeevich; Kukushkin, Oleg Nikolaevich; Krivobokov, Vladimir Nikolaevich; Pobegailo, Grigory Gavrilovich; and Nashivanko, Vitaly Dmitrievich, 3,828,600.

Kroger, Harry, to Sperry Rand Corporation. Bistable semiconductor temperature sensor. 3,829,886, Cl. 357-23.000.

Kron, Heinz; and Grommes, Helmut, to Babcock & Wilcox Limited. Wear plate. 3,829,031, Cl. 241-182.000.

Kruckenberg, Winfried: *See—*
Raue, Roderich; Kruckenberg, Winfried; and Rohe, Ernst-Heinrich, 3,829,461.

Krueger, Keith Theophil, to I-T-E Imperial Corporation. Contact holder with adjustably mounted switch. 3,829,807, Cl. 337-6.000.

Krumbein, Fritz, to Bosch, Robert, Photokino GmbH. Motion picture projector with film stripping mechanism. 3,829,039, Cl. 242-192.000.

Krumm, Charles G.: *See—*
Napor, Carl A.; and Krumm, Charles G., 3,829,017.

Krutak, James J., Sr., to Eastman Kodak Company. 3-[(Amino)-phenyl] indoline compounds and process for manufacturing the same. 3,829,436, Cl. 260-326.110.

Kryah, John C.: *See—*
Delamater, Charles E.; Obermiller, Herbert C.; and Kryah, John C., 3,828,698.

Kubo, Masao: *See—*
Yamada, Norio; Ikejima, Yoritaka; Takasu, Hiromi; Kubo, Masao; and Tanaka, Yoshimasa, 3,828,430.

Kudamatsu, Akio: *See—*
Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, 3,829,565.

Kuehnle, Manfred R., to Coulter Information Systems, Inc. Thin film deposition apparatus using segmented target means. 3,829,373, Cl. 204-298.000.

Kugler, Tibor; and Rieger, Hans Wolfhart, to Swiss Aluminium Ltd. Electrode with protective coating. 3,829,374, Cl. 204-290.00r.

Kuhla, Donald E.: *See—*
Evanega, George R.; Kuhla, Donald E.; and Sarges, Reinhard, 3,829,434.

Kuhle, Engelbert: *See—*
Zumach, Gerhard; Kuhle, Engelbert; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,829,437.

Kuhnlein, Hans: *See—*
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Kukushkin, Oleg Nikolaevich: *See—*
Borisenko, Gleb Pavlovich; Chernobrivenko, Jury Sergeevich; Kutsov, Jury Georgievich; Gorbanev, Arkady Alexeevich; Kukushkin, Oleg Nikolaevich; Krivobokov, Vladimir Nikolaevich; Pobegailo, Grigory Gavrilovich; and Nashivanko, Vitaly Dmitrievich, 3,828,600.

Kuney, George Clark. Whirl-about toy. 3,829,087, Cl. 273-1.00r.

Kunkle, Gerald E., to PPG Industries, Inc. Glass drawing conditioning means. 3,829,304, Cl. 65-193.000.

Kunz, Frederick, and Company, Limited: *See—*
Kunz, Frederick L. G., 3,829,412.

Kunz, Frederick L. G., to Kunz, Frederick, and Company, Limited. Chemically modified polysaccharides and process of preparing same. 3,829,412, Cl. 260-209.00r.

Kuper, Heinrich: *See—*
Ortel, Gerhard, 3,829,345.

Kurihara, Norman H.; and Bublitz, Donald E., to Dow Chemical Company, The. 6,7-Dichloro-p-dithiino (2,3-b)pyridine-2,3,8-tricarbonitrile. 3,829,425, Cl. 260-294.80c.

Kuris, Arthur; Balamuth, Lewis; and Karatjas, Manuel, to Ultrasonic Systems, Inc. Ultrasonic method for cleaning teeth. 3,828,770, Cl. 128-62.00a.

Kurita, Kunio: *See—*
Ishida, Shinichi; Oshima, Noboru; Kurita, Kunio; Suzuki, Isamu; and Ohno, Hidetoshi, 3,829,379.

Kurita, Seiichi; Kaneko, Makoto; and Iikawa, Mituo, to Hitachi, Ltd. Bearing device for vertical-shaft rotary machines. 3,829,179, Cl. 308-160.000.

Kuroe, Akio: *See—*
Nagahiro, Michinori; Deguchi, Masahiro; and Kuroe, Akio, 3,829,892.

Kurreck, Manfred: *See—*
Mnilk, Reinhold; Kurreck, Manfred; and Geltenpoth, Ulrich, 3,829,264.

Kurumada, Tomoyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Horiuchi, Hideo; Matsui, Katsuaki; Kurumada, Tomoyuki; and Ohta, Noriyuki, 3,829,404.

Kutsov, Jury Georgievich: *See—*
Borisenko, Gleb Pavlovich; Chernobrivenko, Jury Sergeevich; Kutsov, Jury Georgievich; Gorbanev, Arkady Alexeevich; Kukushkin, Oleg Nikolaevich; Krivobokov, Vladimir Nikolaevich; Pobegailo, Grigory Gavrilovich; and Nashivanko, Vitaly Dmitrievich, 3,828,600.

Kutter, Eberhard; Griss, Gerhart; Grell, Wolfgang; and Kleemann, Manfred, to Boehringer Ingelheim GmbH. Hypoglycemic pharmaceutical compositions and methods of use. 3,829,574, Cl. 424-258.000.

Kuzmina, Ljudmila Nikolaevna: *See—*
Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.

Kvaerner Brug AS: *See—*
Bognaes, Ragnar; and Solberg, Olav, 3,828,709.

Kwartiroff, Alexander: *See—*
Irsin, Robert P.; and Kwartiroff, Alexander, 3,829,626.

Kyriacou, Demetrios, to Dow Chemical Company, The. Method for the preparation of tetrahalo-4-(alkylsulfonyl) pyridines. 3,829,430, Cl. 260-294.80f.

L & L Products, Inc.: *See—*
Stevens, F. Bradley, 3,829,149.

Labofina S.A.: *See—*
Hanotier, Jacques D. V.; and Hanotier-Bridoux, Monique G. S., 3,829,432.

Lacour, Jacques: *See—*
Borel, Joseph; Lacour, Jacques; and Merckel, Gerard, 3,829,884.

Lam, Josephine. Wearing apparel. 3,828,368, Cl. 2-227.000.

Lambda Electronics Corporation: *See—*
Gautherin, George A., 3,829,794.

Lambert, Robert D., to Multiply Development Corporation, Ltd. Apparatus for felting fibrous elements. 3,828,399, Cl. 19-155.000.

Land, Wilbur G.: *See—*
Dayne, Eddy K.; and Land, Wilbur G., 3,829,061.

Landler, Josef: *See—*
Speitschka, Ernst; and Landler, Josef, 3,829,439.

Lane, John W.: *See—*
Ronzio, Richard A.; Lane, John W.; and Vincent, John D., 3,829,550.

Langdon, David H.; Prentice, James C.; and Van Olinda, David L., to Terry Controls Corporation. Automatic self-testing programmable industrial controller. 3,829,842, Cl. 340-172.500.

Lange, Clement, Jr. Swivel rocking chair. 3,829,157, Cl. 297-263.000.

Lange, K. Robert; Stern, Arthur M.; Gasner, Lawrence L.; and Hsu, Yuan Tsun, to Betz Laboratories, Inc. Beneficiation of lignin solutions and pulp mill wastes. 3,829,388, Cl. 252-180.000.

Langen, Herbert: *See—*
Glatzel, Harmut; and Langen, Herbert, 3,828,755.

Langer, Vojtech; Nesvadba, Emil; and Prerova, Rokytnice U., to Meopta, narodni podnik. Illuminating system of an enlarger. 3,829,210, Cl. 355-35.000.

Lapidus, Milton: *See—*
Alburn, Harvey E.; Clark, Donald E.; Grant, Norman H.; and Lapidus, Milton, 3,829,459.

Larjukhin, Grigory Artemovich; Chernyshev, Valentin Vasilievich; Nikitin, Vladislav Iosifovich; Serikov, Jury Mitrofanovich; and Kosinov, Vyacheslav Georgievich. Self-propelled machine with a driven work-performing member. 3,828,560, Cl. 60-709.000.

Larkin, David L. Educational device. 3,828,447, Cl. 35-9.00r.

Larsen, Eric R.: *See—*
Edamura, Fred Y.; McKendry, Lennon H.; and Larsen, Eric R., 3,829,489.

Larsen, James L.: *See—*
Dillman, Richard F.; Larsen, James L.; and Nardizzi, Alfred M., 3,829,782.

Larson, Russell H.: *See—*
Burk, John L.; Hogan, Spurgeon G., Jr.; Larson, Russell H.; and McGilvray, Bruce L., 3,829,840.

Larsson, Hans-Gunnar; and Bergman, Carl, to Allmanna Svenska Elektriska Aktiebolaget. Apparatus for isostatic hot pressing of powder. 3,829,261, Cl. 425-78.000.

Laswell, John E.; and Wildridge, John E., to United States of America, Navy. Belayed parachute disconnect. 3,829,146, Cl. 294-83.00a.

Lathouwers, Franciscus Johannes Maria; and De Groot, Jacob, to U.S. Philips Corporation. Sintered ferromagnetic core having accurately adjusted dimensions. 3,829,806, Cl. 336-83.000.

Laughman, George J.: *See—*
Blum, Raymond T.; and Laughman, George J., 3,828,483.

Laurizio, Jeremiah J., to American Flange & Manufacturing Co. Inc. Closure combination and method. 3,828,418, Cl. 29-451.000.

Law, William J. H. Partition with concealed slotted standard. 3,828,495, Cl. 52-36.000.

Layson, Allen: *See—*
Witt, Jerry L.; and Layson, Allen, 3,828,827.

LCA Corporation: *See—*
Farber, Milton H.; and Belinkoff, Irving R., 3,828,760.

Le Fevre, Cecil W.: *See—*
Strong, Philip L.; Hunter, Don L.; and Le Fevre, Cecil W., 3,829,308.

Le Suer, William Monroe, to Lubrizol Corporation, The. Boron- and calcium-containing compositions and process. 3,829,381, Cl. 252-33.400.

LeBlanc, Louis H. Cam pawl Actuator. 3,828,617, Cl. 74-127.000.

Lebovits, Morris; and Schaff, James C. Fixed freeboard spar buoy. 3,828,380, Cl. 9-8.00r.

Lecailtel, Pierre; and Dresser, Bruno, to Regie Nationale Des Usines Renault Billancourt and Automobiles Peugeot. Milling heads. 3,828,649, Cl. 90-15.000.

Lechner, Gunther, to Reichert, C., Optische Werke AG. Cover for microtome and ultramicrotome freezing chamber. 3,828,571, Cl. 62-320.000.

Leddy, Robert. Corner assembly for exterior siding. 3,828,499, Cl. 52-278.000.

Lee, David K. K.: *See—*
Caithamer, George J.; Coleman, Ivan V.; and Lee, David K. K., 3,829,617.

Lee, Raymond Organization, Inc., The: *See—*
Gottschalk, Charlotte H., 3,828,888.
Hartman, Wyatt, 3,828,832.
Richter, Calvin; and Van Wyck, William E., 3,828,858.

Leffler, Dennis F., to Pelton & Crane Company. Treatment chair having improved movable arm support devices. 3,829,159, Cl. 297-417.000.

Lehrer, Alexander. Marine load transfer system. 3,828,683, Cl. 104-114.000.

Leiba, Eugene: *See—*
Assouline, Georges; Hareng, Michel; and Leiba, Eugene, 3,829,684.

Leibinger, Berthold, to Trumpf & Co., Firma. Shear construction. 3,828,432, Cl. 30-241.000.

Leifheit International Gunter Leifheit KG.: *See—*
Liebscher, Johannes, 3,828,387.

Leimgruber, Willy; and Weigele, Manfred, to Hoffman-La Roche Inc. 6-Substituted 1-phenazinol 5,10-dioxide derivatives. 3,829,423, Cl. 260-267.000.

Leithiser, George L. Assemblage for forming and straightening. 3,828,602, Cl. 72-383.000.

Lelong, Marion Pasteur. Figure-eight swing. 3,829,086, Cl. 272-85.000.

Lemand Engineering Limited: *See—*
Dabell, Kenneth Hazelton; and Phillips, Raymond Jeffrey, 3,828,862.

Lengnick, Guenther Fritz, to Stauffer Chemical Company. Room temperature curable organopolysiloxanes. 3,829,527, Cl. 260-827.000.

Lengnick, Guenther Fritz, to Stauffer Chemical Company. Room-temperature curing organopolysiloxanes. 3,829,529, Cl. 260-827.000.

Lenski, Robert J.; and Meyer, James H., to Sundstrand Corporation. Burner control. 3,829,276, Cl. 431-14.000.

Lent, William E.; and Flores, Jose A., to United States of America, Navy. Lightweight ceramic lens for microwave antenna. 3,829,403, Cl. 264-44.000.

Leonard, Robert M.: *See—*
Swanke, Roy L.; and Leonard, Robert M., 3,829,720.

Leone, Salvatore. Metal trestle for manufacturing reinforced-concrete beams for floors. 3,828,505, Cl. 52-414.000.

Leonildo, De'Faveri Tron Antonio. Ski boot. 3,828,448, Cl. 36-2.5al.

Lepley, James W., to Flying Dutchman, Inc. Bottom unloading means for silo. 3,828,946, Cl. 214-17.0da.

Lepley, James W., to Flying Dutchman, Inc. Material dislodging means for silo. 3,828,947, Cl. 214-17.0da.

Lerner, Nathan B., to Braum, W., Company, mesne. Safety cap operated by a key. 3,828,959, Cl. 215-9.000.

Leroi, Jean-Claude: *See—*
Charles, Ernest; Leroi, Jean-Claude; and Pech, Michel, 3,829,509.

Lesczynski, Michael, to Carrier Corporation. Level controller and liquid remover for a refrigeration system. 3,828,567, Cl. 62-160.000.

Leslie, Henry R.; and Samways, Roger J., to Lockheed Aircraft Corporation. Engine arrangement for high performance stol aircraft. 3,829,044, Cl. 244-13.000.

Less, Raymond L. Guide. 3,829,065, Cl. 254-190.00c.

Letson, Richard A.; and Cormey, Walter P., to Pacific Communications, Inc. Aircraft emergency warning system. 3,829,781, Cl. 325-115.000.

Levasseur, Joseph L., to H. R. Electronics Company. Vend control with escrow until available product selection. 3,828,903, Cl. 194-1.00n.

Levasseur, Joseph L., to H.R. Electronics Company. Slide switch assembly having piggyback multiple actuators extending through common cover aperture. 3,829,634, Cl. 200-16.00r.

Levey, John. Means for temporarily presetting interlocking elements of combination lock-type container finish closure and method for assembling same. 3,828,519, Cl. 53-15.000.

Levolor Lorentzen, Inc.: *See—*
Anderle, Joseph A.; and Neira, George, 3,828,838.

Lewicki, Walter J., Jr., to Armstrong Cork Company. Curtain coater with restricted flow. 3,828,725, Cl. 118-324.000.

Lewis, Gerald F. Safety pill containers. 3,828,961, Cl. 215-223.000.

Lewis, Jordan D.; Verber, Carl M.; and McGhee, Robert B., to Battelle Development Corporation. Computer-controlled three-dimensional pattern generator. 3,829,838, Cl. 340-172.500.

Licentia Patent-Verwaltungs GmbH: *See—*
Geiser, Hans; and Tessendorf, Gunter, 3,829,822.

Licitis, Gunars, to Glass, Marvin & Associates. Sound recording and reproducing device with visual image means. 3,829,207, Cl. 353-120.000.

Liddell, William S. Stereoscopic optical apparatus. 3,829,202, Cl. 352-62.000.

Liebscher, Johannes, to Leifheit International Gunter Leifheit KG. Rotatable brush for cleaning apparatus. 3,828,387, Cl. 15-182.000.

Lilley, Raymond Percy Arthur: *See—*
Shaw, James Thomas; and Lilley, Raymond Percy Arthur, 3,828,482.

Limpens, Karl: *See—*
Glindmeyer, Friedrich; Limpens, Karl; and Hennenberg, Wilhelm, 3,828,825.

Lindblom, Frank W., to Textron, Inc. Temple hinge spring. 3,829,200, Cl. 351-113.000.

Linde A.G.: *See—*
Spies, Anton; Stephan, Alfred; and Sellmaier, Alfons, deceased, 3,828,564.

Lindquist, Larry B.: *See—*
Klug, Robert F.; and Lindquist, Larry B., 3,829,813.

Lindsay, Kenneth L.: *See—*
Kobetz, Paul; and Lindsay, Kenneth L., 3,829,471.

Linear Devices Inc.: *See—*
Baker, Donald O., 3,828,435.

Linkletter, Robert P. Safety dispensing device. 3,828,981, Cl. 222-153.000.

L'Institut de Researches Ecomoniques et Sociales: *See—*
Mandel, Marc Jean-Christophe Noel, 3,828,446.

Lipsky, Stephen E., to General Instrument Corporation. Polarizing feed apparatus for biconical antennas. 3,829,863, Cl. 343-773.000.

Liska, Manfred: *See—*
Grunleitner, Hans; Kuhnlein, Hans; and Liska, Manfred, 3,829,708.

Litke, Alvin Carl, to Allied Chemical Corporation. High strength liquid metallized azo colorants. 3,829,287, Cl. 8-42.00r.

Little Giant Corporation: *See—*
Bright, Hugh H.; Davis, Lee W.; and Tanaszek, Frank J., 3,829,248.

Litton Business Systems, Inc.: *See—*
Doolittle, Billy J., 3,829,225.

Litzinger, Elmer Francis, to Brown & Williamson Tobacco Corporation. Tobacco smoke filter material. 3,828,800, Cl. 131-262.000.

Lloyd, William A., to Versatec, Inc. Housing assembly for electrstatic printing machine. 3,829,185, Cl. 312-39.000.

Lockemann, Albert: *See—*
Borse, Dietrich; Lockemann, Albert; and Cordsen, Gerd, 3,828,646.

Lockheed Aircraft Corporation: *See—*
Leslie, Henry R.; and Samways, Roger J., 3,829,044.

Lockridge, James E. Safety kneeboard. 3,828,696, Cl. 108-43.000.

Loewe Opta GmbH: *See—*
Richter, Heinz, 3,829,705.

Logan, Ralph Andre; and Thurmond, Carl Dryer, to Bell Telephone Laboratories, Incorporated. Growth of gallium nitride crystals. 3,829,556, Cl. 423-409.000.

Logvinenko, Dmitry Danilovich: *See—*
Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.

Lohr, Raymond J.; Cook, Calvin S.; and Seiersen, William K., to Marx, Louis, & Co., Inc. Child's vehicle simulating jet aircraft. 3,829,126, Cl. 280-240.000.

Loiselle, James Thomas: *See—*
Kolpek, Robert Adolph; and Loiselle, James Thomas, 3,829,855.

Long, Donald Charles; Hartsough, Albert Charles; and Sanford, Robert Fincher, to Princeton Electro Dynamics, Inc. Light controllable electrical switch. 3,829,683, Cl. 250-209.000.

Loop A Line, Inc.: *See—*
McGahee, Welbourne D., 3,828,734.

Loos, Herbert, to Carl Hurth Maschinen-und Zahnradfabrik. Gear working tool. 3,828,597, Cl. 72-102.000.

Lopatko, Anatoly Petrovich: *See—*
Olshansky, Nikolai Alexandrovich; Smelyansky, Matvei Yakovlevich; Lopatko, Anatoly Petrovich; Tkachev, Leonid Grigorievich; Kozhaev, Arkady Filippovich; Sapozhnikov, Alexandr Ivanovich; and Chernakov, Gennady Anatolievich, 3,829,651.

Lorteije, Jean Hubertus Josef; Schmidt, Ernst Machiel; and Van der Put, Henricus Cornelis Adrianus, to U.S. Philips Corporation. Push-button control member with push-through coupling. 3,829,646, Cl. 200-159.00b.

Lozoya, Elpidio. Pen type voltmeter. 3,829,776, Cl. 324-122.000.

Lubrizol Corporation, The: *See—*
Le Suer, William Monroe, 3,829,381.

Lucero, Ronald Ray. Four player chess game apparatus. 3,829,099, Cl. 273-131.0kc.

Ludwig, George, to Bendix Corporation, The. Altitude compensated vacuum amplifier. 3,828,743, Cl. 123-117.00a.

Ludwig Taprogge (Cleaning Installations for Pipe Heating Exchange): *See—*
Eimer, Klaus; and Thal, Heinz, 3,828,930.

Lund, Bjorn: *See—*
Damgaard-Iversen; Hansen, Ove Emil; and Lund, Bjorn, 3,828,837.

Lund, Robert S.; and Koss, Vernon J., to Pettibone Corporation. Cyclicly-operable machine adapted to produce and assemble cope and drag mold parts. 3,828,840, Cl. 164-195.000.

Lundahl, Ezra Cordell, to Hesston Corporation. Hay loader. 3,828,535, Cl. 56-344.000.

Luperti, Harry E., to Pitney-Bowes, Inc. Automatic envelope opener. 3,828,634, Cl. 83-94.000.

Lusk, Walter D.: *See—*
Banks, Michael E.; Lusk, Walter D.; and Ottinger, Robert S., 3,829,558.

Luttrell, John E.: *See—*
Green, John S.; Luttrell, John E.; and Schmitz, James E., 3,828,934.

Lutz, Alfons, to Webasto-Werk W. Baier KG. Control device for power operated automobile sliding roofs. 3,829,155, Cl. 296-137.00f.

Lychak, Veniamin Samuilovich: *See—*
Marbukh, Veniamin Anatolievich; Lychak, Veniamin Samuilovich; and Goncharov, Evgeny Andreevich, 3,829,704.

Lynn, Lawrence, to General Crude Oil & Minerals Company, S.A. Process for treating borocalcic ores. 3,829,553, Cl. 423-279.000.

MacDonald, Robert D., to Cardinal of Adrian, Inc. Door latch set. 3,829,137, Cl. 292-171.000.

Machacek, Jiri: *See—*
Vit, Jaroslav; Casensky, Bohuslav; Mamula, Milan; and Machacek, Jiri, 3,829,449.

Machado, Mark A.; and Forchini, James F., to Ecodyne Corporation, mesne. Pipe joint. 3,829,107, Cl. 277-207.000.

Machinenfabrik Spaichingen GmbH: *See—*
Hamma, Gerhard, 3,828,583.

Machkov, Gennady Maximovich: *See—*
Turchaninov, Vasily Vasilievich; Shelkovnikov, Jury Petrovich; Machkov, Gennady Maximovich; and Korolev, Oleg Alexandrovich, 3,828,944.

Macho, Helmut, to Saurer, Adolph, Ltd. Device for engaging and disengaging the dobby shaft and picking shaft of looms. 3,828,824, Cl. 139-1.00e.

MacLean, Alexander F.: *See—*
Serad, George A.; and MacLean, Alexander F., 3,829,468.

MacLennan, Alastair S., to Ford Motor Company. Variable pumping system for a propeller fan. 3,829,236, Cl. 415-156.000.

Macrander, Max S., to GTE Automatic Electric Laboratories Incorporated. Clock distribution circuit. 3,829,790, Cl. 331-61.000.

Maeda, Tsuneo, to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Seating detecting device. 3,829,803, Cl. 335-205.000.

Magbjer, Gunnar Ingemar: *See—*
Egerborg, Bo Malte Staffan; Gadefelt, Goran Robert; Magbjer, Gunnar Ingemar; and Spang, Kjell, 3,828,504.

Maggi, Nicola; and Cricchio, Renato, to Gruppo Lepetit S.p.A. Imidazole substituted rifamycins. 3,829,417, Cl. 260-239.30p.

Magin, Irving J., to Itek Corporation. Photoprocessing stabilizer solutions. 3,829,318, Cl. 96-61.00r.

Magyar, Charles; Root, Lewis A.; and Senger, Edwin C., to Hilti Aktiengesellschaft. Stud magazine. 3,828,925, Cl. 206-347.000.

Mahy, Tyler X., to Norton Company. High surface area valve metal powder. 3,829,310, Cl. 75-.5bb.

Maigret, Robert; and King, Geoffrey, to Micro Components Corporation. Supply reversal protection circuit. 3,829,709, Cl. 307-202.000.

Makihara, Masuichi, to Shinnittoku Denki Kabushiki Kaisha. Mica capacitor. 3,829,738, Cl. 317-261.000.

Mako, John: *See—*
Bonafino, Edward J.; Gilbert, Richard L.; and Mako, John, 3,828,669.

Malcosky, Norman D.; McLean, Ronald H.; Singh, Kanwal N.; and Auh, Chung M., to Columbia Gas System Service Corporation. Compact heating and cooling system. 3,828,575, Cl. 62-476.000.

Maliakal, Joseph C.: *See—*
Briggs, Walton E.; and Maliakal, Joseph C., 3,828,527.

Mallory, P. R., & Co. Inc.: *See—*
Dey, Arabinda Narayan, 3,829,330.
Huddleston, Robert F., 3,829,648.

Malyshev, Boris Nikolaevich: *See—*
Krasnov, Mikhail Mikhailovich; Stelmakh, Mitrofan Fedorovich; Malyshev, Boris Nikolaevich; Prozorov, Vladimir Nikolaevich; Saprykin, Pavel Ivanovich; and Batrukova, Maria Grigorievna, 3,828,788.

Mamula, Milan: *See—*
Vit, Jaroslav; Casensky, Bohuslav; Mamula, Milan; and Machacek, Jiri, 3,829,449.

Mandel, Alan F.: *See—*
Winkler, Charles L.; and Mandel, Alan F., 3,828,892.

Mandel, Marc Jean-Christophe Noel, to L'Institut de Researches Ecomoniques et Sociales. Process for accelerating the learning of languages. 3,828,446, Cl. 35-35.00c.

Mangen, Carl Arnold: *See—*
Eriksson, Karl Gunnar; Wahlgren, Sven Erik; and Mangen, Carl Arnold, 3,828,612.

Mansfield Tire & Rubber Company, The: *See—*
Fuchs, Leo, 3,829,057.

Mantovani, Marisa: *See—*
Butti, Adriano; Prino, Giuseppe; and Mantovani, Marisa, 3,829,567.

Manus, Donald J., to Texas Instruments Incorporated. Method for making semiconductor packaged devices and assemblies. 3,828,425, Cl. 29-590.000.

Marbukh, Veniamin Anatolievich; Lychak, Veniamin Samuilovich; and Goncharov, Evgeny Andreevich. Electric-hydraulic governor for a hydraulic turbine. 3,829,704, Cl. 307-187.000.

Marchal, Philippe Albert Hippolyte: *See—*
Boy-Marcotte, Jean Louis; Simmonnet, Jacques Louis Paul; Marchal, Philippe Albert Hippolyte; and Verrien, Jean Prudent Fernand Rene, 3,828,574.

Marchant, Paul A., to Ethyl Development Corporation. Container with safety closure. 3,828,957, Cl. 215-9.000.

Marcum, Donald R.: *See—*
Short, Thomas D.; and Marcum, Donald R., 3,829,627.

Maremont Corporation: *See—*
Nandyal, Srinath, 3,828,897.
Terry, Stanley M., 3,829,652.

Margolis, Maier, to Hughes Aircraft Company. System for compensating line-of-sight from stabilized platform against misdirection caused by lateral linear accelerations. 3,829,659, Cl. 235-61.50s.

Mariani, Remo. Lighting means for underwater illumination. 3,829,675, Cl. 240-1.01p.

Marley, James A.: *See—*
Perloff, David S.; Kerr, John T.; and Marley, James A., 3,829,890.

Marsh, J. L., Incorporated: *See—*
Holkestad, Howard P., 3,828,922.

Marsh, Norman F.; Morand, Gary W.; and Sokol, David G., to Sangamo Electric Company. Load survey recorder for measuring electrical parameters. 3,829,772, Cl. 324-113.000.

Marshall A. Binder: *See—*
Grady, Michael J., 3,828,395.

Marshall, John J., to Aichele Associates, Inc. Dual battery charger for vehicles. 3,829,753, Cl. 320-6.000.

Martin, Henry; Duerr, Dieter; and Hitz, Hans Rudolf, to Ciba Limited. Thiourea compounds and biocidal preparations containing them. 3,829,485, Cl. 260-552.00r.

Martin, John J. Collapsible baking pan. 3,828,966, Cl. 220-7.000.

Martin Miller Gesellschaft m.b.H.: *See—*
Spengler, Ernst Maximilian; and Stursberg, Rolf Karl, 3,828,631.

Martin, Robert C., to Texas Instruments Incorporated. Liquid crystal drive circuit. 3,828,548, Cl. 58-50.00r.

Martin, Stephen J. Shont negative impedance amplifier. 3,829,625, Cl. 179-170.00g.

Martinec, Josef: *See—*
Cernocky, Jiri; Riha, Miloslav; and Martinec, Josef, 3,828,828.

Martines, Francis M.; and Spahr, Philip K., to Singer Company, The. Electronic synchro drive system. 3,829,752, Cl. 318-654.000.

Marubishi Yuka Kogyo Kabushiki Kaisha: *See—*
Ogawa, Yoshikatsu; Katada, Keiji; Nakano, Mitsuhiro; and Yasumatsu, Kozi, 3,829,398.

Marusova, Alla Nikolaevna: *See—*
Tolstoguzov, Vladimir Borisovich; Izjumov, Dmitry Borisovich; Grinberg, Valery Yakovlevich; Marusova, Alla Nikolaevna; and Chekhovskay, Violettateofilovna, 3,829,587.

Marvin Glass & Associates: *See—*
Kaelin, Bette M., 3,828,467.
Morrison, Howard J.; and Glass, Marvin I., 3,828,462.

Marx, Louis, & Co., Inc.: *See—*
Lohr, Raymond J.; Cook, Calvin S.; and Seiersen, William K., 3,829,126.

Maschinenfabrik Hilma Gesellschaft mit beschrankter Haftung: *See—*
Dziuballe, Gerhard; and Weber, Albrecht, 3,829,075.

Maschinenfabrik Moenus Aktiengesellschaft: *See—*
Bechtold, Johann, 3,828,384.

Mashovets, Tatyana Vadimovna: *See—*
Vitovsky, Nikolai Alexandrovich; Vikhly Georgy Alexandrovich; Mashovets, Tatyana Vadimovna; and Ryvkin, Solomon Meerovich, 3,829,334.

Masi, James Vincent, to Bunker Ramo Corporation. Optical memory using trapped electrons in a crystal of photoconductor material. 3,829,847, Cl. 340-173.0lt.

Mason, Athol James Malcolm. Apparatus for filling and emptying containers for use in fire fighting. 3,828,857, Cl. 169-53.000.

Mason, Brian Edward; and Young, Michael Iain, to Chamberlain Industries Limited. . 3,828,400, Cl. Hydraulic motors and the like.

Massachusetts Institute of Technology: *See—*
Kebabian, Paul L., 3,829,670.

Massonne, Joachim: *See—*
Rudolph, Werner; and Massonne, Joachim, 3,829,511.

Masstabfabrik Schaffhausen AG: *See—*
Nestler, Richard; and Doetsch, Peter, 3,828,694.

Master Molded Products Corporation: *See—*
Weinhart, Martin, 3,828,778.

Masuhara, Toshiaki: *See—*
Hashimoto, Norikazu; and Masuhara, Toshiaki, 3,829,888.

Material Control, Inc.: *See—*
Reiter, Robert C., 3,829,022.

Matluck, Meyer: *See—*
Barry, Richard H.; Matluck, Meyer; and Orshitzer, Philip, 3,829,563.

Matras, Edward J.: *See—*
Hampton, Quentin L.; and Matras, Edward J., 3,828,933.

Matskin, Leonid Arkadievich: *See—*
Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich; Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich, 3,829,042.

Matsui, Katsuaki: *See—*
Murayama, Keisuke; Morimura, Syoji; Horiuchi, Hideo; Matsui, Katsuaki; Kurumada, Tomoyuki; and Ohta, Noriyuki, 3,829,404.

Matsui, Yutaka; Kazama, Seiji; and Nakabayashi, Masamitsu, to Takeda Chemical Industries, Ltd. Polyurethane adhesives based on w,w'-diisocyanate dimethylcyclo-hexane. 3,829,533, Cl. 260-858.000.

Matsunaga, Akihiro. Method of making peanut flour. 3,829,589, Cl. 426-427.000.

Matsuo, Jon T.; and Neipling, Lawrence E., to United States of America, Navy. Programmable, reversible drag, multi-stage parachute. 3,829,046, Cl. 244-152.000.

Matsuoka, James T., to Intercole Automation, Inc. Apparatus for compoundsin rubber, elastomer, plastic and like mixes. 3,829,067, Cl. 259-192.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hamabe, Takeshi; and Suzuki, Takashi, 3,829,364.
Kawamata, Yukio; Yamamoto, Keisuke; and Yamaguchi, Namio, 3,829,606.
Nagahiro, Michinori; Deguchi, Masahiro; and Kuroe, Akio, 3,829,892.
Tanaka, Takashi; and Nomura, Yasuo, 3,829,895.
Tohi, Atsutomo; Sakai, Kunio; Fukai, Masakazu; and Tsujimoto, Yoshinobu, 3,829,333.

Matsushita Electric Industrial Company: *See—*
Kohashi, Tadao, 3,829,743.

Matsushita Electric Industrial Company Limited: *See—*
Aoyama, Akimitsu, 3,829,727.
Kohashi, Tadao, 3,829,881.
Uchida, Kosaku, 3,829,891.

Matsushita Electric Works, Ltd.: *See—*
Yamada, Norio; Ikejima, Yoritaka; Takasu, Hiromi; Kubo, Masao; and Tanaka, Yoshimasa, 3,828,430.

Matsushita, Kazuo, to Yokohama Rubber Co., Ltd., The. Air cushion type fender for use with a quay-wall. 3,828,715, Cl. 114-219.000.

Matthews, Leo J.: *See—*
Charns, Norman; and Matthews, Leo J., 3,829,124.

Mattucci, Anna Maria; and Perrotti, Emilio, to Snam Progetti, S.p.A. Process for the preparation of hydroxy-hydroperoxides from olefins. 3,829,502, Cl. 260-610.00r.

Maxwell, David A.: *See—*
Allison, David F.; and Maxwell, David A., 3,829,889.

MCA Disco-Vision, Inc.: *See—*
Elliot, James E., 3,829,622.

McCabe, John Stanton, to Chicago Bridge & Iron Company. Offshore liquid storage facility. 3,828,565, Cl. 62-45.000.

McCall, David D.: *See—*
Harris, Sterling G.; Smith, Joseph D.; McCall, David D.; Moore, Glenn S.; Hidden, William P.; and Svendsen, Noel, 3,828,398.

McClure, Charles A. Reinforced abrasive wheels. 3,828,485, Cl. 51-206.0nf.

McConnell, George C.: *See—*
Burns, Henry C.; and McConnell, George C., 3,828,566.
Burns, Henry C.; and McConnell, George C., 3,829,566.

McCoy, Frederic C.: *See—*
Cole, Edward L.; and McCoy, Frederic C., 3,829,525.

McDonald, Bernard, to Medical Testing Systems, Inc. Genitourinary test instrument. 3,828,765, Cl. 128-2.00b.

McDonnell Douglas Corporation: *See—*
Waters, Elmer D., 3,828,845.

McGahee, Welbourne D., to Loop A Line, Inc. Animal collar or harness and leash with quick connector. 3,828,734, Cl. 119-109.000.

McGhee, Robert B.: *See—*
Lewis, Jordan D.; Verber, Carl M.; and McGhee, Robert B., 3,829,838.

McGilvray, Bruce L.: *See—*
Burk, John L.; Hogan, Spurgeon G., Jr.; Larson, Russell H.; and McGilvray, Bruce L., 3,829,840.

McGraw-Edison Company: *See—*
Stewart, Victor E., Jr., 3,829,835.

McKay, Alexander S., to Texaco Exploration Canada Ltd. Means and method for providing an output corresponding to the expected subsidence of a frozen earth formation. 3,829,685, Cl. 250-256.000.

McKeen, Joseph E. Transport system utilizing fluid power. 3,828,687, Cl. 104-154.000.

McKendry, Lennon H.: *See—*
Edamura, Fred Y.; McKendry, Lennon H.; and Larsen, Eric R., 3,829,489.

McKillip, William J.; and Culbertson, Billy M., to Ashland Oil Inc. Poly-n, n-ethylene ureas and thermoset resinous compositions derived therefrom. 3,829,407, Cl. 260-77.50r.

McLaughlin, Richard J.: *See—*
Frankland, John T.; and McLaughlin, Richard J., 3,829,834.

McLean, Ronald H.: *See—*
Malcosky, Norman D.; McLean, Ronald H.; Singh, Kanwal N.; and Auh, Chung M., 3,828,575.

McLellan, Reedy E. Four wheeled foot propelled child's toy vehicle steered by balance of rider. 3,829,127, Cl. 280-259.000.

McLeod, Harold D. Quick load pressure pot. 3,829,025, Cl. 239-373.000.

McMahon, Richard A.: *See—*
Woodward, Richard V.; and McMahon, Richard A., 3,828,855.

McMann, Renville H., to Columbia Broadcasting System, Inc. Single tube color camera system and method. 3,829,607, Cl. 178-5.4st.

McMinn, Robert E.; and Jamison, Mickey B., to Black, Sivalls & Bryson, Inc. High temperature material introduction apparatus. 3,828,850, Cl. 165-109.000.

McMullin, Donald, Jr.: *See—*
Becker, Roger T.; Hatter, Stephen L.; and McMullin, Donald, Jr., 3,828,920.

McNeil Corporation: *See—*
Carillon, Frank R.; Meyer, William E.; and Ramazzotti, Dario J., 3,829,272.

McQuay-Perfex, Inc.: *See—*
Beck, Joseph J., 3,829,285.

McRobert, Leon R., to FMC Corporation. Article pickup machine. 3,828,534, Cl. 56-328.00r.

Mead Johnson & Company: *See—*
Wu, Yao Hua; and Mueller, Arthur Jacob, 3,829,414.

Mead, Robert H.: *See—*
Heathwaite, Hewart H.; and Mead, Robert H., 3,828,620.

Meadows, Ernest D.; and Buffington, Robert B., to Meadows Industries Inc. Collapsible swift. 3,829,036, Cl. 242-110.100.

Meadows Industries Inc.: *See—*
Meadows, Ernest D.; and Buffington, Robert B., 3,829,036.

Means, David K., to Reliance Electric Company. Process control method and apparatus. 3,829,845, Cl. 340-172.500.

Medalist Industries, Inc.: *See—*
Fuch, Alvin J., 3,828,671.

Medical Incorporated: *See—*
Anderson, Lawrence; and Bentzen, Bruce D., 3,828,787.

Medical Testing Systems, Inc.: *See—*
McDonald, Bernard, 3,828,765.

Medrick, John D., to Ford Motor Company. Automatic choke control for engines. 3,828,745, Cl. 123-119.00f.

Meeussen, Louis Achilles; Bestenreiner, Friedrich; and Huber, Hans-Peter, to AGFA-Gevaert Aktiengesellschaft. Apparatus for simultaneous reproduction of visible and audible information. 3,829,610, Cl. 178-6.60a.

Megadiamond Corporation: *See—*
Hall, Howard T., 3,829,544.

Meier, Jean: *See—*
Allais, Andre; Meier, Jean; and Dube, Jacques, 3,829,585.

Melcher, Robert, to Siemag Siegener Maschinenbau G.m.b.H. Injection molding machine. 3,829,266, Cl. 425-192.000.

Melchior, Gerard, to Compagnie Industrielle des Telecommunications. Color intensity control system. 3,829,613, Cl. 178-6.800.

Melead, James J., to Beloit Corporation. Interchangeable die lips for extrusion die and independently adjustable deckles therefor. 3,829,274, Cl. 425-466.000.

Meloy, Gilbert K.; and Farrington, Diane G., to Standard Oil Company, The. Flame-resistant polyester composition. 3,829,532, Cl. 260-864.000.

Menick, Jack E.: *See—*
Furon, Leon D.; Robinson, John A.; and Menick, Jack E., 3,828,609.

Meupta, narodni podnik: *See—*
Langer, Vojtech; Nesvadba, Emil; and Prerova, Rokytnice U., 3,829,210.

Mercadante, Joseph: *See—*
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Merck & Co., Inc.: *See—*
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Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Irmscher, Klaus; Kramer, Josef; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,829,421.

Merckel, Gerard: *See—*
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Mero-Werke AG: *See—*
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Merrill, Edward W., Estin, Hans H.; Cronkhite, Leonard W., Jr.; and Wolbach, William W., Trustees of the River, Charles, Foundation. Filter for removing polynuclear aromatic hydrocarbons form tobacco smoke. 3,828,801, Cl. 131-265.000.

Merrit, Charles, to Substrate Inc. Vacuum packaging method and platen therefor. 3,828,520, Cl. 53-2.00a.

Merry, Lorraine Anne; and Solomon, David Henry, to Commonwealth Scientific and Industrial Research Organization. Coated products for veterinary use. 3,829,564, Cl. 424-78.000.

Messerchmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung: *See—*
Schmidt, Gunther, 3,828,551.

Messerschmitt-Bolkow-Blohm Gesellschalt mit beschrankter Haftung: *See—*
Born, Gunthard; Erben, Klaus-Dieter; and Mohr, Friedbert, 3,829,792.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
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Metafab Industries, Inc.: *See—*
Apple, Charles N., Sr., 3,828,414.

Mettler, Hal C. Method and apparatus for ultrasonic treatment of lower tissues simultaneous with heating of subcutaneous, outer muscle and lower tissues. 3,828,769, Cl. 128-24.00a.

Mettoy Company Limited, The: *See—*
Nicholls, Bryan Frederick, 3,829,111.

Metzger, Michael V.; and Pearce, Reginald, to Engis Corproation. Molded abrasive article of iron-silicon alloy, and diamond powder. 3,829,299, Cl. 51-309.000.

Meyer, Donald R.: *See—*
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Lenski, Robert J.; and Meyer, James H., 3,829,276.

Meyer Products, Inc.: *See—*
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Meyer, William E.: *See—*
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Meyer-Ebrecht, Dietrich: *See—*
Schroder, Gerd; and Meyer-Ebrecht, Dietrich, 3,829,785.

Miceli, Marc L., to Meyer Products, Inc. Plow blade lift frame and method of using same. 3,828,449, Cl. 37-41.000.

Mickelson, Maurice G., to Pako Corporation. Reel spindle for multiple width reels. 3,829,034, Cl. 242-68.300.

Micro Components Corporation: *See—*
Maigret, Robert; and King, Geoffrey, 3,829,709.

Micro Devices Corporation: *See—*
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Midland-Ross Corporation: *See—*
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Midorikawa, Akira: *See—*
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Mietz, Gerhard O.: *See—*
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Mihailovski, Alexander, to Stauffer Chemical Company. 1-Picolyl-3-phenyl ureas and their utility as herbicides. 3,829,307, Cl. 71-94.000.

Miki, Shinsuke; and Nishida, Takao, to Amchem Products, Inc., mesne. Method for coating the surface of a metallic material. 3,829,371, Cl. 204-181.000.

Milkov, Mihail Yordanov: *See—*
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Millauer, Hans, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of pentafluorethyl iodide and heptafluorisopropyl iodide. 3,829,512, Cl. 260-653.600.

Miller, Albert R.: *See—*
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Miller, Allyn C. Automatic sequencing high vacuum mechanical valve system and apparatus. 3,829,244, Cl. 417-53.000.

Miller, David: *See—*

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Miller, David E., to Emerson Electric Co. Fan and high temperature limit control for warm air furnaces. 3,829,811, Cl. 337-353.000.
Miller, George A.; and Greenfield, Stanley A., to Rohm & Haas Company. Fungicidal salicylaldehyde hydrazones and azines. 3,829,492, Cl. 260-566.00b.
Miller, Richard A., to Rusco Industries, Inc.,. Molded bed frame leg. 3,828,376, Cl. 500-200.00r.
Milner Corporation: *See*—
Milner, Sanford N.; and Milner Corporation, 3,829,547.
Milner, Sanford N.; and Milner Corporation. Method for polymerizing plastic. 3,829,547, Cl. 264-297.000.
Minarik, Ronald W.: *See*—
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Natkanski, Zygmunt, 3,828,811.
Nelson, Norman E., 3,829,040.
Minney, Jack L., to Rockwell International Corporation. Crystal oscillator using field effect transistors in an integrated circuit. 3,829,795, Cl. 331-116.00r.
Minolta Camera Kabushiki Kaisha: *See*—
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Uchida, Isamu, 3,828,644.
Ueda, Hiroshi; and Nishitani, Kiyoshi, 3,829,872.
Mintey, Montague R. Sail launching device. 3,828,712, Cl. 114-104.000.
Miokovic, Stevan, to Regie Nationale des Usines Renault and Automobiles Peugeot. Stretcher-pulleys. 3,829,176, Cl. 308-18.000.
Mishcon, Lester; and Reagan, Donald W., to Singer Company, The. Apparatus for positioning jacks in slotted pattern wheel rings according to a predetermined pattern. 3,828,581, Cl. 66-1.00r.
Mitchell, Robert W. Easel construction. 3,829,211, Cl. 355-74.000.
Mitchell, Wallace F., to Ammco Tools, Inc,. Grinder attachment for a lathe. 3,828,487, Cl. 51-259.000.
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Mitsubishi Rayon Company, Ltd.: *See*—
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Miyata Kinzoku Kogyo Kabushiki Kaisha: *See*—
Aoyama, Yahyo, 3,828,364.
Miyata, Takeo; Hamada, Seiya; Inoue, Katsuaki; and Baba, Mikito, to Mitsumi Electric Company, Limited. Semiconductor impedance circuit and oscillator using the same. 3,829,799, Cl. 333-80.00t.
Miyatake, Masayuki: *See*—
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Miyazawa, Yoshihide: *See*—
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Mizutani, Yukio; Izumi, Yusuki; and Watanabe, Yoshiaki, to Tokuyama Soda Kabushiki Kaisha. Method of producing dimerized saturated ketones. 3,829,495, Cl. 260-586.00r.
Mnilk, Reinhold; Kurreck, Manfred; and Geltenpoth, Ulrich, to Holstein & Kappert, Maschinenfabrik Phonix GmbH. Molding apparatus. 3,829,264, Cl. 425-149.000.
Mobil Oil Corporation: *See*—
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Dickert, Joseph John, Jr.; and Williams, Albert Lloyd, 3,829,534.
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Mobley, Loreley S.: *See*—
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Mochel, Ashton, to Ocean Power Generation, Inc. Electric generating apparatus converting the pushing action fo waves into electrical power. 3,828,557, Cl. 60-503.000.
Modine Manufacturing Company: *See*—
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Moeller, Wolfgang. Tile device for joining permanent ceiling tile to removable ceiling tile. 3,828,508, Cl. 52-489.000.
Moessner, Manfred: *See*—
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Moffatt, Davis F.: *See*—
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Mohawk Data Sciences Corporation: *See*—
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Mohr, Friedbert: *See*—
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Molins Limited: *See*—
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Moller, Jens L., to Continental Can Company, Inc. Recessed crown cap. 3,828,963, Cl. 215-40.000.
Monro, Richard J., to Combustion Equipment Associates, Inc. Acoustic nozzle. 3,829,015, Cl. 239-102.000.
Monroy, Heliodore. Apparatus for the production of 1,2 dihydroquinolines. 3,829,292, Cl. 23-263.000.
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Moore, George E., Jr., to Moore, Jewel B. Aircraft tow bar. 3,829,131, Cl. 280-493.000.
Moore, Gerald, 1/3 to Buell, Eugene F. Multi-power ratchet wrenches. 3,828,629, Cl. 81-57.300.
Moore, Glenn S.: *See*—
Harris, Sterling G.; Smith, Joseph D.; McCall, David D.; Moore, Glenn S.; Hidden, William P.; and Svendsen, Noel, 3,828,398.
Moore, James C., to Portland Wire & Iron Works. Apparatus for removable securing sound-proofing material to a construction vehicle. 3,829,150, Cl. 296-39.00a.
Moore, Jewel B.: *See*—
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Moraw, Roland: *See*—
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Morelli, Alberto. Motor vehicle having wheels in a diamond pattern. 3,828,876, Cl. 180-21.000.
Morey, Dennison H. Method, container and tool for growing and planting grapes and other deep and/or tap rooted plants. 3,828,473, Cl. 47-58.000.
Morez, Eugene S., to Chicago Musical Instrument Co. Scanner for electronic musical instrument. 3,828,643, Cl. 84-115.000.
Mori, Inosuke: *See*—
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Morin, Philip J. Automotive voltage and continuity tester. 3,829,763, Cl. 324-51.000.
Morinok Yukio, to Seiko Koki Kabushiki Kaisha. Interlock mechanism interlocking camera shutter with a double-frame film advance prevention apparatus. 3,829,874, Cl. 354-204.000.
Morita, Hideo: *See*—
Ikegami, Akiji; and Morita, Hideo, 3,829,438.
Morita, Yoshio. Remotely controlled latch system for fire doors and the like. 3,829,138, Cl. 292-254.000.
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Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.

Morre, MacDonald S. Carrier for interchangeable camera lenses. 3,828,991, Cl. 224-5.00v.

Morren, George J.: *See*—
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Morrison, Charles F., Jr., to Valleylab Inc. Combined electrcoagulator-suction instrument. 3,828,780, Cl. 128-275.100.

Morrison, Howard J.; and Glass, Marvin I., to Marvin Glass & Associates. Animated toy. 3,828,462, Cl. 46-41.000.

Morrison, James J., to Kasle Steel Corporation. Method of manufacturing a pallet. 3,828,705, Cl. 113-116.00r.

Morrison, Walter C.: *See*—
Hayasi, Nisiki; and Morrison, Walter C., 3,829,338.

Morse, Glenn B. Assembly for converting a drill press to a wood lathe. 3,828,834, Cl. 144-1.00c.

Morton-Norwich Products, Inc.: *See*—
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Mos Technology, Inc.: *See*—
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Mosch, Wolfgang. Mixing capsule. 3,828,434, Cl. 32-60.000.

Mosler Safe Company, The: *See*—
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Mr. Christmas, Incorporated: *See*—
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Mrozik, Helmut H., to Merck & Co., Inc. N-substituted-3,5-(trifluoromethyl or bromo) benzenesulfonamides. 3,829,487, Cl. 260-556.0ar.

Mueller, Albrecht; Zeeh, Bernd; and Kiefer, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of N-(1-alken-1-yl)-carbamyl chlorides. 3,829,482, Cl. 260-544.00c.

Mueller, Arthur Jacob: *See*—
Wu, Yao Hua; and Mueller, Arthur Jacob, 3,829,414.

Mueller, Martin; and Wingo, Mason C., to Bates Packaging Services, Inc., mesne. Machine for making ice cream cookie sandwiches and similar food products. 3,828,660, Cl. 99-450.400.

Mueller, Werner H.; and Campbell, Charles R., to Monsanto Company. Cycloalkanebis (methylamine) isomerization. 3,829,490, Cl. 260-563.00d.

Mueller, Wolfgang H.; Thaler, Warren A.; and Oswald, Alexis A., to Esso Research and Engineering Company. Preparation of S-2-hydrocarbylthioalkyl esters of thiophosphorus acids. 3,829,535, Cl. 260-979.000.

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Mulder, Cornelius, to U.S. Philips Corporation. Microampere current source. 3,829,789, Cl. 330-23.000.

Muller, Willi, to Siemens Aktiengesellschaft. Voltage transformer for a fully insulated metal-clad, high-voltage switching installation. 3,829,742, Cl. 317-103.000.

Multiply Development Corporation, Ltd.: *See*—
Lambert, Robert D., 3,828,399.

Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing silanes. 3,829,555, Cl. 423-347.000.

Murase, Kenaki: *See*—
Saito, Masaru; Hasegawa, Norio; and Murase, Kenaki, 3,828,902.

Muratani, Takuro; Saito, Hideki; and Watanabe, Tatsuo, to Kokusai Denshin Denwa Kabushiki Kaisha. Control system for diversity transmission in a terrestrial station of satellite communication. 3,829,777, Cl. 325-4.000.

Murayama, Keisuke; Morimura, Syoji; Horiuchi, Hideo; Matsui, Katsuaki; Kurumada, Tomoyuki; and Ohta, Noriyuki, to Sankyo Company Limited. Stabilization of synthetic polymers with certain piperidino-thiazoline compounds. 3,829,404, Cl. 260-45.8sn.

Murphree, Francis J., to United States of America, Navy. Sonar reverberation simulator. 3,829,596, Cl. 35-10.400.

Murray, Lowell C.; and Ruble, John G., to Container Corporation of America. Combination gift wrap and receptacle. 3,829,008, Cl. 229-87.00r.

N L Industries, Inc.: *See*—
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Nagahiro, Michinori; Deguchi, Masahiro; and Kuroe, Akio, to Matsushita Electric Industrial Co., Ltd. Automatic tracking matching system. 3,829,892, Cl. 360-73.000.

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Naitou, Nobuyosi; Baba, Keizi; Huziwara, Sigehisa; and Yamanaka, Takesi, to Omron Tateisi Electronics Company. Automatic vending machine including a plurality of customer units interconnected with a single processing and dispensing unit. 3,828,904, Cl. 19410.000.

Nakabayashi, Masamitsu: *See*—
Matsui, Yutaka; Kazama, Seiji; and Nakabayashi, Masamitsu, 3,829,533.

Nakagawa, Tadashi: *See*—
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Nakamura, Akinori: *See*—
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Nakamura, Yoshio, to Toyo Purasu Sukuryu Kabushiki Kaisha (Toyo Plus Screw Co. Ltd.). Method of manufacturing a fastener such as a bolt, rivet, or the like. 3,828,382, Cl. 10-27.00r.

Nakano, Masao, to Kawasaki Jukogyo Kabushiki Kaisha. Sealing arrangement for an air compressor. 3,829,252, Cl. 417-482.000.

Nakano, Mitsuhiro: *See*—
Ogawa, Yoshikatsu; Katada, Keiji; Nakano, Mitsuhiro; and Yasumatsu, Kozi, 3,829,398.

Nakata, Kazuo: *See*—
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Nambu, Shyuya, to Nissan Motor Company, Limited. Automotive air-fuel mixture heating system. 3,828,747, Cl. 123-122.0ab.

Nandyal, Srinath, to Maremont Corporation. Special piston seal. 3,828,897, Cl. 188-317.000.

Nanjyo, Toshio; Aoshika, Masayuki; and Nakamura, Akinori, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Electric direct-arc furnace. 3,829,595, Cl. 13-32.000.

Napor, Carl A.; and Krumm, Charles G., to Kahle Engineering Co. Automatic flux spray dispenser. 3,829,017, Cl. 239-135.000.

Nara, Akinao; Hara, Michio; Kanema, Seiichi; and Kano, Minoru, to Hitachi, Ltd. Route control system for guided vehicles and the like. 3,828,685, Cl. 104-130.000.

Nardizzi, Alfred M.: *See*—
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Nash, Gerald C. Adjustable pole suppor: system. 3,828,937, Cl. 211-86.000.

Nashivanko, Vitaly Dmitrievich: *See*—
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National Research Institute for Metals: *See*—
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Natkanski, Zygmunt, to Minnesota Mining and Manufacturing Company. Valve assembly. 3,828,811, Cl. 137-556.000.

Nattrass, Frank. Cargo sling. 3,829,144, Cl. 294-74.000.

Nawa, Toshio: *See*—
Okada, Senry; Hanawa, Masaaki; Ohoka, Mitsuo; Nagawa, Seishichiro; and Nawa, Toshio, 3,829,273.

Neal, William C. Kick-over tool. 3,828,853, Cl. 166-117.500.

Neff, Frederick R. Electronic readout control. 3,828,622, Cl. 74-409.000.

Neibauer, Lance A.: *See*—
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Neipling, Lawrence E.: *See*—
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Neira, George: *See*—
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Nelson, Norman C.; and Harley, Daniel C., to Kel-Lite Industries, Inc. Rechargeable flashlight. 3,829,676, Cl. 240-10.6ch.

Nelson, Norman E., to Minnesota Mining and Manufacturing Company. Collapsing pin roller for tape cassette. 3,829,040, Cl. 242-199.000.

Nemec, Charles A.: *See*—
Conrad, Victoria N.; and Nemec, Charles A., 3,828,366.

Nepote, Alain Robert, to Etablissements Carpano & Pons S.A. Fishing reel drive mechanism. 3,829,041, Cl. 242-218.000.

Ness, Irving Stanley: *See*—
Kennette, John Wilson; and Ness, Irving Stanley, 3,828,783.

Ness, Richard A., to Alza Corporation. Microporous ocular device. 3,828,777, Cl. 128-260.000.

Nestler, Richard; and Doetsch, Peter, to Masstabfabrik Schaffhausen AG. Adjustment-and arresting mechanism especially for a drafting table. 3,828,694, Cl. 108-10.000.

Nesvadba, Emil: *See*—
Langer, Vojtech; Nesvadba, Emil; and Prerova, Rokytnice U., 3,829,210.

Neuman, Milton C., to FMC Corporation. Piston for swash plate pump. 3,828,657, Cl. 92-258.000.

Neumann, Calvin L.; and Best, Freddie W., to Reynolds Leasing Corporation, mesne. Tobacco expansion process utilizing microwave energy. 3,828,797, Cl. 131-140.00p.

Neumann, Klaus; and Fritz, Wolfgang, to VEB Bergmann-Borsig/Goerlitzer Maschinenbau. Electrical control arrangement for gas or steam turbines. 3,828,814, Cl. 137-599.000.
Newcomer, Keith E., to Grace, W. R., & Co. Trailer hitch. 3,829,129, Cl. 280-416.00r.
Newman, Stanley. Navigational computer. 3,829,658, Cl. 235-61.0nv.
Newstead, Charles; and Wright, Andrew Charles Walden, to Girling Limited. Hydraulic actuating means for vehicle brakes. 3,828,898, Cl. 188-345.000.
NGK Insulators, Ltd.: *See—*
Soejima, Shigeo; Ohmura, Akira; and Watanabe, Koichiro, 3,829,326.
Niagara Blower Company: *See—*
Stutz, Robert C., 3,828,570.
Nicholls, Bryan Frederick, to Mettoy Company Limited, The. Skates. 3,829,111, Cl. 280-11.300.
Nicholls, Gordon A.: *See—*
Thompson, Norman S.; Nicholls, Gordon A.; and Han, Shu-Tang, 3,829,357.
Nichols, Ronald A.; and Rakuson, George. Water skiing apparatus. 3,828,717, Cl. 115-6.100.
Nicol, James; Shapiro, Sidney; and Roetter, Martyn F., to United States of America, Navy. Superconducting gradiometer for measuring first and second derivatives of a magnetic field. 3,829,768, Cl. 324-43.00r.
Nidy, Eldon G.: *See—*
Kornis, Gabriel; and Nidy, Eldon G., 3,829,463.
Kornis, Gabriel; and Nidy, Eldon G., 3,829,464.
Nielsen, Jacob August: *See—*
Christensen, Svend; and Nielsen, Jacob August, 3,828,681.
Nielsen, Lloyd A. Educational puzzle. 3,829,100, Cl. 273-157.00r.
Nieuwenhoven, Hendricus Jacobus Cornelis: *See—*
van der Lely, Cornelis; and Nieuwenhoven, Hendricus Jacobus Cornelis, 3,828,954.
Nigg, William, to Allen Electric and Equipment Company. Analyzer panel. 3,829,773, Cl. 324-114.000.
Nihon Kogyo Co., Ltd.: *See—*
Miyasaki, Norihiko; Ishii, Minoru; Sakurai, Hiroji; Suzuki, Hisao; Nagatsumo, Katsuyoshi; and Furukawa, Hitoshi (said Miyasaki assor. to), 3,829,228.
Nihon Polymer Co., Ltd.: *See—*
Miyasaki, Norihiko; Ishii, Minoru; Sakurai, Hiroji; Suzuki, Hisao; Nagatsumo, Katsuyoshi; and Furukawa, Hitoshi (said Suzuki assor. to), 3,829,228.
Nikitin, Vladislav Iosifovich: *See—*
Larjukhin, Grigory Artemovich; Chernyshev, Valentin Vasilievich; Nikitin, Vladislav Iosifovich; Serikov, Jury Mitrofanovich; and Kosinov, Vyacheslav Georgievich, 3,828,560.
Niles Parts Co., Ltd.: *See—*
Inaba, Shigeru, 3,829,812.
Nilsson, Per-Erik; and Sjogren, Bengt-Ake Harald, to Aktiebolaget Bofors. Analog-to-digital converter. 3,829,852, Cl. 340-347.0nt.
Nilsson, Sven Walter, to SKF Industrial Trading and Development Company B.V. Electrically driven ball or roll screw mechanism. 3,829,726, Cl. 310-83.000.
Nippon Concrete Industries Co., Ltd.: *See—*
Okada, Senry; Hanawa, Masaaki; Ohoka, Mitsuo; Nagawa, Seishichiro; and Nawa, Toshio, 3,829,273.
Nippon Electric Company, Limited: *See—*
Fujimoto, Hiroshi, 3,829,779.
Tanaka, Kunihiro, 3,829,604.
Nippon Felt Co., Ltd.: *See—*
Tsujibayashi, Koichi, 3,829,359.
Nippon Kogaku K.K.: *See—*
Ono, Shigeo, 3,829,867.
Nippon Kokan Kabushiki Kaisha: *See—*
Usi, Genichi; and Komine, Isamu, 3,828,596.
Nippondenso Co., Ltd.: *See—*
Kitano, Masao; and Kondo, Yasuo, 3,828,844.
Nippons Oil and Fats Company Limited: *See—*
Kato, Mitsukuni; Komai, Takeshi; and Aoshima, Kazuyohi, 3,829,503.
Nishida, Takao: *See—*
Miki, Shinsuke; and Nishida, Takao, 3,829,371.
Nishiguchi, Kouichi, to Nissan Motor Company, Limited. System for reducing toxic compounds in exhaust gases from internal combustion engines. 3,828,552, Cl. 60-304.000.
Nishikawa, Akikazu: *See—*
Shimizu, Tetuo; and Nishikawa, Akikazu, 3,829,761.
Nishitani, Kiyoshi: *See—*
Ueda, Hiroshi; and Nishitani, Kiyoshi, 3,829,872.
Nishizawa, Junichi; and Nonaka, Terumoto, to Zaidan Hojin Handotai Kenkyu Shinkokai. Charge coupled semiconductor memory device. 3,829,885, Cl. 357-24.000.
Nissan Motor Company, Limited: *See—*
Gotoh, Miyuki; Mizuno, Yukio; and Shibata, Kazuo, 3,828,829.
Hioki, Kazuo; and Onoda, Michio, 3,828,752.
Nambu, Shyuya, 3,828,747.
Nishiguchi, Kouichi, 3,828,552.
Shimoda, Yasunori, 3,829,260.
Yamamoto, Yukio, 3,828,594.
Nitta, Tohei, to Westinghouse Electric Corporation. Electrical insulator having a special external surface configuration for improved performance in contaminated atmospheres. 3,829,629, Cl. 174-212.000.
Nobusawa, Tsukumo, to Asahi Optical Co. Device for detecting a precise focusing point and an automatic focus adjusting device. 3,829,866, Cl. 354-25.000.
Nolden, William F., to Johnson Service Company. Hydraulic actuator. 3,828,556, Cl. 60-432.000.
Nomura, Yasuo: *See—*
Tanaka, Takashi; and Nomura, Yasuo, 3,829,895.
Nonaka, Terumoto: *See—*
Nishizawa, Junichi; and Nonaka, Terumoto, 3,829,885.
Nordsiek, Karl-Heinz: *See—*
Sommer, Neidhart; and Nordsiek, Karl-Heinz, 3,829,409.
Norman, Keith: *See—*
Croasdale, Fred; Clayton, James William Barnes; and Norman, Keith, 3,828,539.
North American Rockwell Corporation: *See—*
Reed, Edward L., 3,829,552.
Norton Company: *See—*
Mahy, Tyler X., 3,829,310.
Noto, William L.: *See—*
Cohen, Harold; and Noto, William L., 3,829,114.
Noumi, Makoto; and Seki, Susumu, to Hitachi, Ltd. Double unit control device. 3,829,668, Cl. 235-153.0ae.
Novak, Warren D., to Mosler Safe Company, The. Film cassette. 3,829,203, Cl. 352-78.00r.
Nowack, Gerhard P.: *See—*
Zuech, Ernst A.; Johnson, Marvin M; and Nowack, Gerhard P., 3,829,515.
Nowak, Bernard E.: *See—*
Cottis, Steve G.; Economy, James; and Nowak, Bernard E., 3,829,406.
Nowak, Herbert: *See—*
Irmscher, Klaus; Kramer, Josef; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,829,421.
Nowell, John R., to Honeywell Information Systems, Inc. Sequencer for a multiple switching regulator. 3,829,755, Cl. 321-2.000.
Nozaki, Kenzie, to Shell Oil Company. Production of diethyl ketone. 3,829,499, Cl. 260-597.00a.
Nozawa, Hideo; Aoki, Masayoshi; and Isono, Shoji, to Kabushiki Kaisha Daini Seikosha. Watertight watch case. 3,828,549, Cl. 58-90.00r.
N.V. Bekaert S.A.: *See—*
Van Vlaenderen, Roger, 3,829,545.
Oakes, Vincent; and Cross, David F. W., to Interstab Limited, mesne. Vinyl chloride resins stabilized with metal compound-epoxy compound-phosphite combination. 3,829,396, Cl. 260-23.0xa.
Obermiller, Herbert C.: *See—*
Delamater, Charles E.; Obermiller, Herbert C.; and Kryah, John C., 3,828,698.
Oberto, Edwin L., to Burgess Vibrocrafters, Inc. Oscillating water sprinkler. 3,829,018, Cl. 239-242.000.
Obstfelder, Guenther: *See—*
Soehring, Gerhard; Moessner, Manfred; Kreutze, Gerhard; and Obstfelder, Guenther, 3,829,206.
Oce-van der Grinten N.V.: *See—*
Van Meijel, Henricus J. M.; and van der Sterren, Martin L., 3,829,208.
Ocean Power Generation, Inc.: *See—*
Mochel, Ashton, 3,828,557.
O'Connor, Chadwell. Roller band actuator. 3,828,615, Cl. 74-89.220.
O'Connor, Robert. Vehicle seat harness. 3,829,158, Cl. 297-390.000.
O'Driscoll, Kenneth F.; and Isen, Allan A., to Warner-Lambert Company, mesne. Method of cleaning a soft hydrophilic contact lens. 3,829,329, Cl. 134-26.000.
Oestergren, Henrik William Stig, to Aktiebolaget Fredr. Wagner. Direction reversing device for transport equipment. 3,828,917, Cl. 198-127.00r.
Oesterling, Thomas O.: *See—*
Stehle, Randall G.; and Oesterling, Thomas O., 3,828,579.
Stehle, Randall G.; and Oesterling, Thomas O., 3,829,579.
Oestmann, Eldon D., to Caterpillar Tractor Company. High drive-track-type vehicle. 3,828,873, Cl. 180-9.500.
Oestmann, Eldon D.; and Alexander, George F., to Caterpillar Tractor Co. Recoil mechanism for track-type tractors. 3,829,172, Cl. 305-10.000.
Offshore Company, The: *See—*
Moore, William H.; Richardson, George T.; and Pease, Floyd T., 3,828,561.
Offutt, Elmer Bradley; and Babich, Edward, to Vendo Company, The. Divided shelf structure for helix type product dispensing machines. 3,828,971, Cl. 221-75.000.
Ogawa, Yoshikatsu; Katada, Keiji; Nakano, Mitsuhiro; and Yasumatsu, Kozi, to Marubishi Yuka Kogyo Kabushiki Kaisha. Plasticized vinyl chloride polymer composition for transparent packing film. 3,829,398, Cl. 260-31.80r.
Ogiso, Mitsutoshi: *See—*
Aizawa, Hiroshi; Sunouchi, Akio; and Ogiso, Mitsutoshi, 3,829,868.
Ogle, Robert Walter, to IMS, Limited. Flex-o-jet. 3,828,779, Cl. 128-272.000.

Ogoro, Masanobu; and Takashi, Kiyoshi, to Canon Kabushiki Kaisha. Photographic camera. 3,829,870, Cl. 354-50.000.

Ogura, Katsutoshi; and Chikazawa, Katsuichi, to Sumitomo Electric Industries, Ltd. Marking apparatus for elongated objects. 3,828,665, Cl. 101-36.000.

Ohashi, Taizo: *See—*
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 3,829,555.

Ohira, Tutomu: *See—*
Kato, Tetsuya; and Ohira, Tutomu, 3,829,400.

Ohmura, Akira: *See—*
Soejima, Shigeo; Ohmura, Akira; and Watanabe, Koichiro, 3,829,326.

Ohno, Hidetoshi: *See—*
Ishida, Shinichi; Oshima, Noboru; Kurita, Kunio; Suzuki, Isamu; and Ohno, Hidetoshi, 3,829,379.

Ohoka, Mitsuo: *See—*
Okada, Senry; Hanawa, Masaaki; Ohoka, Mitsuo; Nagawa, Seishichiro; and Nawa, Toshio, 3,829,273.

Ohorodnik, Alexander; Sennewald, Kurt; Hundeck, Joachim; and Stutzke, Paul, to Knapsack Aktiengesellschaft. Process for preparing mono-chloroacetic acid. 3,829,478, Cl. 260-539.00a.

Ohta, Noriyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Horiuchi, Hideo; Matsui, Katsuaki; Kurumada, Tomoyuki; and Ohta, Noriyuki, 3,829,404.

Oka, Yuushi: *See—*
Hoshino, Masao; and Oka, Yuushi, 3,829,361.

Okada, Senry; Hanawa, Masaaki; Ohoka, Mitsuo; Nagawa, Seishichiro; and Nawa, Toshio, to Nippon Concrete Industries Co., Ltd. Device for separating concrete pole and the like from mold frame. 3,829,273, Cl. 425-444.000.

Okayama, Sigeru, 1/2 to Kabushiki Kaisha Medica. Photographic enlargement instrument. 3,829,212, Cl. 355-75.000.

Oktronics, Inc.: *See—*
Davenport, Raymond A., 3,829,748.

Olbo Textilwerke GmbH, Firma: *See—*
Alker, Heinrich, 3,828,544.

Oliver, Ward H.: *See—*
Sieber, Alexander; Kny, Hermann; and Oliver, Ward H., 3,829,496.

Oliver, Wilfred T.: *See—*
Hailstone, Victor L.; Harper, Ronald N.; and Oliver, Wilfred T., 3,829,069.

Olivetti, Ing., C., & C., S.p.A.: *See—*
Roano, Domenico; and Quarisa, Armando, 3,828,909.

Olshansky, Nikolai Alexandrovich; Smelyansky, Matvei Yakovlevich; Lopatko, Anatoly Petrovich; Tkachev, Leonid Grigorievich; Kozhaev, Arkady Filippovich; Sapozhnikov, Alexandr Ivanovich; and Chernakov, Gennady Anatolievich. Method of electron-beam welding o thick parts by vertical and girth seams. 3,829,651, Cl. 219-121.0em.

Omori, Thomas T.; and Imaoka Hiroshi, to Kreha Corporation of America. Carbon paper. 3,829,327, Cl. 117-226.000.

Omron Tateisi Electronics Company: *See—*
Naitou, Nobuyosi; Baba, Keizi; Huziwara, Sigehisa; and Yamanaka, Takesi, 3,828,904.

Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, to Seiko Koki Kabushiki Kaisha. Focal plane shutter with groups of shutter blades. 3,829,878, Cl. 354-246.000.

Ono, Shigeo, to Nippon Kogaku K.K. Camera equipped with an automatic exposure control system. 3,829,867, Cl. 354-28.000.

Onoda, Michio: *See—*
Hioki, Kazuo; and Onoda, Michio, 3,828,752.

Oohara, Saburo, to Kanebo Ltd. Method and apparatus for cleaning waste liquid containing diluted dye. 3,829,380, Cl. 210-30.000.

Orendi, Roderich, to Gustav Wagner Machinenfabrik. Circular saw. 3,828,642, Cl. 83-823.000.

Orenstein & Koppel AG: *See—*
Scholler, Gerhart, 3,828,913.

Oritz, Angel J. Pipe cutting and plugging machine. 3,828,408, Cl. 29-33.00r.

Ornstein, Jacob L.: *See—*
Charest, Kenneth; Hanley, Robert F.; and Ornstein, Jacob L., 3,829,296.

Orshitzer, Philip: *See—*
Barry, Richard H.; Matluck, Meyer; and Orshitzer, Philip, 3,829,563.

Ortel, Gerhard, to Kuper, Heinrich. Process and apparatus for positioning sheets. 3,829,345, Cl. 156-393.000.

Ortelli, Aurelio, to Riva Calzoni S.p.A. Exhaust valve for internal combustion engine. 3,828,808, Cl. 137-340.000.

Orth, Dieter: *See—*
Irmscher, Klaus; Kramer, Josef; Cimbollek, Gerhard; Orth, Dieter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,829,421.

Osanai, Hiroshi: *See—*
Ishikawa, Hisao; Osanai, Hiroshi; and Kawabata, Terutsugu, 3,829,602.

Oshida, Yoshitada: *See—*
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Oshima, Noboru: *See—*
Ishida, Shinichi; Oshima, Noboru; Kurita, Kunio; Suzuki, Isamu; and Ohno, Hidetoshi, 3,829,379.

Osing, Halbe: *See—*
De Bonth, Petrus Cornelis Wilhelmus Maria; Osing, Halbe; Verburg, Cornelis Andries; and Muijderman, Everhardus Albertus, 3,829,270.

Oswald, Alexis A.: *See—*
Mueller, Wolfgang H.; Thaler, Warren A.; and Oswald, Alexis A., 3,829,535.

Ott, Hans: *See—*
Hardtmann, Goetz E.; and Ott, Hans, 3,829,422.

Otterbeck, Finn: *See—*
Brautaset, Steinar; and Otterbeck, Finn, 3,829,050.

Ottinger, Robert S.: *See—*
Banks, Michael E.; Lusk, Walter D.; and Ottinger, Robert S., 3,829,558.

Ottmar, Paul; and Stein, Hermann, to Didier-Werke AG. Refractory block for lining firing and melting chambers. 3,828,509, Cl. 52-497.000.

Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna. Method for the activation of loose ingredients of elastomer mixes. 3,829,028, Cl. 241-1.000.

Ovonic Image Systems, Inc.: *See—*
Smitzer, Louis A.; and Amtmann, Jurgen, 3,829,215.

Owen, Robert E., to General Motors Corporation. Annular dessicant tank for air leveling systems. 3,828,881, Cl. 180-75.000.

Owens-Corning Fiberglas Corporation: *See—*
Haynes, Harold L.; and Harvey, Michael J., 3,829,302.
Russell, Robert G., 3,829,301.

Owsley, Herbert B.: *See—*
Bunn, Stuart E.; and Owsley, Herbert B., 3,829,253.

Oyagi, Syuji: *See—*
Fujii, Masaru; Oyagi, Syuji; Kamei, Tutomu; and Mori, Inosuke, 3,828,737.

Ozutsumi, Minoru; Miyazawa, Yoshihide; Motohashi, Katsuichi; and Kiritani, Masataka, to Hodogaya Chemical Co., Ltd. and Fuji Photo Film Co., Ltd. Pressure-sensitive phthalide compound copying sheet. 3,829,322, Cl. 117-36.800.

Pacific Communications, Inc.: *See—*
Letson, Richard A.; and Cormey, Walter P., 3,829,781.

Pahlas, Clark J., to Palmer. A.N., Company, The. Combination game and educational device. 3,829,088, Cl. 273-1.00m.

Paimen, Tuomas. Brake adjuster. 3,828,896, Cl. 188-79.5sc.

Pakhomov, Ilia Fedorovich: *See—*
Glushko, Mikhail Fedorovich; and Pakhomov, Ilia Fedorovich, 3,828,938.

Pako Corporation: *See—*
Mickelson, Maurice G., 3,829,034.

Palagyi, Tivadar: *See—*
Galgoczy, Gabor; Gyulai, Zoltan; Palagyi, Tivadar; and Wagensommer, Jozsef, 3,828,515.

Palmer, A.N., Company, The: *See—*
Pahlas, Clark J., 3,829,088.

Palmer, Lewis H., III: *See—*
Westlund, Arnold E., Jr.; Palmer, Lewis H., III; Audesse, Emery G.; and Huston, Leroy S., 3,829,729.

Palumbo, Arnoldo. Resonating tethered tubular members. 3,828,468, Cl. 46-191.000.

Park, Alexander C., to A & C Park Incorporated. Engine driven cart. 3,829,117, Cl. 280-96.100.

Park, Richard E.: *See—*
Gathright, Jack G.; and Park, Richard E., 3,829,671.

Parker, Levi C.: *See—*
Senn, Charles A., III; and Parker, Levi C., 3,829,524.

Parkinson, Geoffrey John, to T.I. (Group Services) Limited. Gauging dimensions. 3,829,220, Cl. 356-160.000.

Parkinson, Howard E.: *See—*
Conroy, George J.; and Parkinson, Howard E., 3,829,856.

Patz, Paul. Multisection conveyor having adjustable elbow between adjacent conveyor sections. 3,828,916, Cl. 198-115.000.

Pavlov, Roman Vladimirovich: *See—*
Bykov, Alexandr Vasilievich; Scherbakov, Vsevolod Sergeevich; Sudarkin, Lev Alexandrovich; and Pavlov, Roman Vladimirovich, 3,829,255.

Payne, Bryan Oliver, to Vickers Limited. Image-splitting devices for sizing instruments. 3,829,609, Cl. 178-6.800.

Payne, P. Donald, to Mos Technology, Inc. Artproof method for semiconductor devices. 3,829,213, Cl. 355-79.000.

Payne, Peter R.: *See—*
Karaganis, James J.; and Payne, Peter R., 3,829,861.

Payne, Stanley D.: *See—*
Hill, Donald E.; Payne, Stanley D.; and Walker, Robert G., 3,828,830.

Peace, Franklin. Dispensing apparatus for applying exterminating and preservative compositions. 3,828,464, Cl. 43-131.000.

Pearce, Reginald: *See—*
Metzger, Michael V.; and Pearce, Reginald, 3,829,299.

Pearson, Leonard Charles: *See—*
Jehu, Victor James; and Pearson, Leonard Charles, 3,829,140.

Pease, Floyd T.: *See—*
Moore, William H.; Richardson, George T.; and Pease, Floyd T., 3,828,561.

Pech, Michel: *See—*

Charles, Ernest; Leroi, Jean-Claude; and Pech, Michel, 3,829,509.

Peck, William H.; and Collier, Samuel A. Solid bowl centrifugal separator. 3,829,009, Cl. 233-7.000.

Peckinpaugh, Frank Lee; Stables, Wilbur Leon; and Biron, Raymond Joseph. Allied Chemical Corporation Commingling jet for multifilament yarn. 3,828,404, Cl. 28-1.400.

Pelanz, Herbert M., to Allis-Chalmers Corporation. Gas insulated high voltage electrical transmission line with means for damping transients. 3,829,707, Cl. 307-147.000.

Pelton & Crane Company: *See—*
Leffler, Dennis F., 3,829,159.

Penberthy, Harvey Larry. Gasoline stove. 3,829,278, Cl. 431-227.000.

PEPRO, Societe pour le Developpement et al Vente de Specialities Chimiques: *See—*
Demozay, Daniel, 3,829,568.

Performance Industries, Inc.: *See—*
Sutton, Lawrence R.; Ranno, Carl P.; and Hewson, Kenneth E., 3,828,391.

Perini, Paul A.: *See—*
Testaguzza, Gino S.; and Perini, Paul A., 3,828,496.

Perkin-Elmer Corporation, The: *See—*
Hufnagel, Robert E., 3,829,691.

Perkins, Garry R., to Spotnails, Inc. Coiled strip of collated fasteners. 3,828,924, Cl. 206-343.000.

Perkins Marine Lamp and Hardware Corporation: *See—*
Perkins, Marvin S., 3,828,714.

Perkins, Marvin S., to Perkins Marine Lamp and Hardware Corporation. Marine hardware. 3,828,714, Cl. 114-218.000.

Perloff, David S.; Kerr, John T.; and Marley, James A., 1/2 interest to Corning Glass Works and 1/2 interest to Signetics Corporation. Ion implanted resistor and method. 3,829,890, Cl. 357-91.000.

Perma-Blade, Inc.: *See—*
Bonney, John L. V., Jr., 3,828,638.

Perrin, Duane O.; and Smegal, Julius G. Pipe coupling. 3,828,403, Cl. 24-270.000.

Perrin, George S., to Plastic Research and Development Corporation. Drop spin fishing lure. 3,828,463, Cl. 43-42.110.

Perrotti, Emilio: *See—*
Mattucci, Anna Maria; and Perrotti, Emilio, 3,829,502.

Perrotti, Emilio; and Koch, Paolo. Process for the production of alkylsulfuric acids and corresponding salts. 3,829,457, Cl. 260-459.000.

Persidsky, Maxim D. Optical system and method for counting sperm cells. 3,829,216, Cl. 356-36.000.

Peters Machinery Company: *See—*
Talbat, Richard C.; Rose, Edward; and Roth, Robert A., 3,828,918.

Peters, Max D. Filter system. 3,828,530, Cl. 55-473.000.

Petersen, Sigrud R.; and Young, Josiah L., to Westinghouse Electric Corporation. Rectifier assembly for brushless excitation systems. 3,829,725, Cl. 310-68.00d.

Peterson Machine Tool, Inc.: *See—*
Goering, Dan H., 3,829,257.

Peterson, Richard H.; and Finch, Robert A. Keyboard instrument player system with time division multiplexing techniques and synchronized rhythm device. 3,829,597, Cl. 84-1.030.

Peterson, William H., to Pullman Incorporated. Pneumatic hopper car door actuating system. 3,828,948, Cl. 214-63.000.

Petres, Stephen Anthony, to Joslyn Manufacturing and Supply Company. Method and apparatus for installing anchors. 3,828,562, Cl. 61-53.500.

Petsch, Harold A., to Chaska Chemical Company, Inc. Spinner assembly. 3,829,019, Cl. 239-251.000.

Pettibone Corporation: *See—*
Lund, Robert S.; and Koss, Vernon J., 3,828,840.

Peytier, Andre: *See—*
Pietermaat, Francois Paul; Peytier, Andre; and Berckmans, Walter, 3,829,608.

Pfiffner, Albert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,829,577.

Pfizer Inc.: *See—*
Conover, Lloyd H.; and Woodward, Robert B., 3,829,453.
Evanega, George R.; Kuhla, Donald E.; and Sarges, Reinhard, 3,829,434.
Kadin, Saul B., 3,829,446.
Richards, Hugh C., 3,829,573.

Phelon, R. E., Company, Inc.: *See—*
Phelon, Russell D.; and Van Amsterdam, John C., 3,828,426.

Phelon, Russell D.; and Van Amsterdam, John C., to Phelon, R. E., Company, Inc. Method of fabricating magnetomotive devices. 3,828,426, Cl. 29-598.000.

Phelps Dodge Industries, Inc.: *See—*
Carlsson, Sven A., 3,828,502.

Philips Petroleum Company: *See—*
Woodruff, Gene N., 3,829,321.

Phillips, Charles E. Particulate material mixing machine. 3,829,066, Cl. 259-3.000.

Phillips, Dale P.: *See—*
Phillips, Dale P.; and Schlesinger, Jefferson S. (said Schlesinger assor. to said), 3,829,590.

Phillips, Dale P.; and Schlesinger, Jefferson S., said Schlesinger assor. to said Phillips, Dale P. Method of upgrading wheat. 3,829,590, Cl. 426-578.000.

Phillips, Floyd L., Jr. Reynolds, R. J., Tobacco Company Composite slideable dispensing carton. 3,828,923, Cl. 206-254.000.

Phillips Petroleum Company: *See—*
Doss, Richard C.; and Thomas, Moses L., 3,829,526.
Gardner, Lloyd E., 3,829,513.
Zuech, Ernest A., 3,829,514.
Zuech, Ernest A.; and Johnson, Marvin M., 3,829,516.
Zuech, Ernest A., 3,829,517.
Zuech, Ernst A.; Johnson, Marvin M; and Nowack, Gerhard P., 3,829,515.

Phillips, Raymond Jeffrey: *See—*
Dabell, Kenneth Hazelton; and Phillips, Raymond Jeffrey, 3,828,862.

Phillips, Richard C., to Insulation & Ceiling Supply. Ceiling panel insert. 3,828,506, Cl. 52-475.000.

Physiological Electronics Corporation: *See—*
Douglas, David W., 3,828,768.

Piber, Earl T., to Cutler-Hammer, Inc. Off-locking overhanging trigger switch. 3,829,645, Cl. 200-157.000.

Picker Corporation: *See—*
Goetz, Jerry E., 3,829,698.
Hura, Michael Wickliffe, 3,829,701.

Pieper, Eberhard: *See—*
Stetter, Georg; and Pieper, Eberhard, 3,829,254.

Pierie, Charles Gorgas. Door return and closure mechanism. 3,828,393, Cl. 16-65.000.

Pietermaat, Francois Paul; Peytier, Andre; and Berckmans, Walter, to AGFA-Gevaert N.V. Device for recording images with signal level being maintained for one line period. 3,829,608, Cl. 178-6.60a.

Pietrasz, Vincent: *See—*
Reash, Clair W.; and Pietrasz, Vincent, 3,829,730.

Pillischafske, Edward L. Clamp bolt for an automotive vehicle battery. 3,829,824, Cl. 339-230.00c.

Pincoffs, Peter H.: *See—*
Bozanic, Donald A.; Mergerian, Dickron; Minarik, Ronald W.; and Pincoffs, Peter H., 3,829,760.

Pinette, Laurier A., 49 1/2% to Ismann, Herbert. Method and apparatus for forming fine mesh non-woven web. 3,829,339, Cl. 156-179.000.

Pinkham, Jesse R., to Reynolds, R.J., Tobacco Company. Ststem and apparatus for handling green leaf tobacco at the warehouse level. 3,828,662, Cl. 100-7.000.

Pitney-Bowes, Inc.: *See—*
Luperti, Harry E., 3,828,634.

Plasko, Emil Robert, to Micro Devices Corporation. Thermal limiter construction and electrical switch and system utilizing the same. 3,829,809, Cl. 337-107.000.

Plasser, Franz; Theurer, Josef; and Schubert, Egon, to Plasser, Franz Bahnbaumaschinen-Industrie Gesellschaft, m.b.H. Track surveying. 3,828,440, Cl. 33-144.000.

Plasser, Franz Bahnbaumaschinen-Industrie Gesellschaft, m.b.H.: *See—*
Plasser, Franz; Theurer, Josef; and Schubert, Egon, 3,828,440.

Plastic Forming Company, Inc., The: *See—*
Schurman, Peter T., 3,828,969.

Plastic Research and Development Corporation: *See—*
Perrin, George S., 3,828,463.

Plastronics Corporation: *See—*
Bird, Stanford W., 3,829,143.

Platt International Limited: *See—*
Croasdale, Fred; Clayton, James William Barnes; and Norman, Keith, 3,828,539.

Platt, Thomas W.; and Arnold, Harmon W., to Flex-O-Laotrs, Inc. Wire fabric. 3,829,048, Cl. 245-1.000.

Plessey Handel und Investments A.G.: *See—*
Beavitt, Alan Robert, 3,829,817.
Berlock, Monty David; and Dobrowolski, Tadeusz, 3,829,735.

Pliva Pharmaceutical and Chemical Works: *See—*
Butula, Ivan; and Karlovic, Gordana, 3,829,493.

Pobegailo, Grigory Gavrilovich: *See—*
Borisenko, Gleb Pavlovich; Chernobrivenko, Jury Sergeevich; Kutsov, Jury Georgievich; Gorbanev, Arkady Alexeevich; Kukushkin, Oleg Nikolaevich; Krivobokov, Vladimir Nikolaevich; Pobegailo, Grigory Gavrilovich; and Nashivanko, Vitaly Dmitrievich, 3,828,600.

Pocock, Adrian R. A.; and Cole, Michael A., to Chandler Evans Inc. Binary rate multiplier. 3,829,665, Cl. 235-150.300.

Polach, Josef: *See—*
Jancik, Frantisek; and Polach, Josef, 3,828,385.

Poland, Robert L., to Kewanee Machinery & Conveyor Co., a division of Chromalloy American Corporation. Agricultural implement with foldable wings. 3,828,860, Cl. 172-311.000.

Polaroid Corporation: *See—*
Bader, Henry; and January, Susan C., 3,829,443.
Downey, Rogers B.; and Thomas, Paul W., 3,829,205.
Erlichman, Irving, 3,828,421.
Feingold, Michael H., 3,829,445.
Gold, Nicholas, 3,829,871.
Powers, Sheldon D.; and Thoenen, Earl R., 3,829,879.

Polin, Stanton G. Temporary colostomy tube. 3,828,782, Cl. 128-283.000.

Polio Establishment: *See—*
Vogeli, Ernat, 3,829,175.

Pollich, Gerhard: *See—*
Jeschke, Willi; and Pollich, Gerhard, 3,829,085.

Poplinski, Charles A. Compactor for use in compacting and discharging loose material. 3,828,663, Cl. 100-42.000.

Portinari, Giovanni; and Zagarella, Adriano, to Industrie Pirelli Societa Per Azioni. Joint for electric cables having conductor insulated with an extruded dielectric. 3,829,600, Cl. 174-73.00r.

Portland Wire & Iron Works: *See—*
Moore, James C., 3,829,150.

Posselt, Klaus: *See—*
Thiele, Kurt; and Posselt, Klaus, 3,829,469.

Powanda, Thomas Michael, to Celanese Corporation. Oilless alkyds. 3,829,530, Cl. 260-850.000.

Powell, Gordon Francis Wellington, to Molins Limited. Rod guide assembly for continuous rod making machines. 3,829,695, Cl. 250-358.000.

Powers, Sheldon D.; and Thoenen, Earl R., to Polaroid Corporation. Low-cost photographic fluid spreading apparatus. 3,829,879, Cl. 354-304.000.

Powling, Frank F.: *See—*
Smith, Jerry L.; and Powling, Frank F., 3,829,633.

Poyak, Steve. Non-staking corner slugs for joining mitred extrusions. 3,828,401, Cl. 24-73.00b.

Pozharskaya, Galina Tikohnovna: *See—*
Belyaev, Viktor Borisovich; Butrova, Ekaterina Sergeevna; Kiselev, Jury Vladimirovich; and Pozharskaya, Galina Tikohnovna, 3,829,733.

PPG Industries, Inc.: *See—*
Kunkle, Gerald E., 3,829,304.
Shealy, Robert G., 3,829,300.

Prade, Wolfgang, to Zbrojovka, Narodni podnik. Page end indicator mechanism for typewriters or like machines. 3,828,912, Cl. 197-189.000.

Pradt, Louis A.: *See—*
Copa, William M.; and Pradt, Louis A., 3,828,525.

Prager, Irwin D. Safety swim or safety float emergency float. 3,828,381, Cl. 9-316.000.

Prakken, Gerrit: *See—*
T'Jampens, Germain Remi; and Prakken, Gerrit, 3,829,731.

Pratt Manufacturing Corporation: *See—*
Smith, Richard W., 3,828,636.

Prefecture de Police: *See—*
Thiebault, Robert, 3,828,590.

Prentice, James C.: *See—*
Langdon, David H.; Prentice, James C.; and Van Olinda, David L., 3,829,842.

Prerova, Rokytnice U.: *See—*
Langer, Vojtech; Nesvadba, Emil; and Prerova, Rokytnice U., 3,829,210.

Pressley, Arther Mitchell: *See—*
Goodbar, Reid C.; and Pressley, Arther Mitchell, 3,828,543.

Price, Raymond M., to United States of America, Army, mesne. Propellants plasticized with high energy compounds and having high energy polymers as binder. 3,829,336, Cl. 149-19.300.

Priestley, Michael John; and Cornthwaite, Eric, to International Computers Limited. Signal switching and distributing systems. 3,829,801, Cl. 333-7.000.

Princeton Electro Dynamics, Inc.: *See—*
Long, Donald Charles; Hartsough, Albert Charles; and Sanford, Robert Fincher, 3,829,683.

Prino, Giuseppe: *See—*
Butti, Adriano; Prino, Giuseppe; and Mantovani, Marisa, 3,829,567.

Prints, Thomas R.: *See—*
Bouton, Frank M., Jr.; and Prints, Thomas R., 3,829,673.

Prisk, Bert C., to General Motors Corporation. Laminated liquid pump and method of making same. 3,829,342, Cl. 156-257.000.

Procter & Gamble Company, The: *See—*
Abbott, Charles Theodoric, Jr.; and Smith, George Cummingha, Jr., 3,829,385.

Production Machinery Corporation: *See—*
Withrow, David A., 3,828,599.

Productions Sarcem S.A.: *See—*
Sallin, Pierre, 3,829,037.

Produits Chimiques Pechiney-Saint-Gobain: *See—*
Strini, Jean-Claude, 3,829,477.

Progil: *See—*
Berthoux, Jean; and Barrillon, Claude Gerbelot, 3,829,451.
Charles, Ernest; Leroi, Jean-Claude; and Pech, Michel, 3,829,509.

Prosser, Paul Edward: *See—*
Sheffield, David John; Prosser, Paul Edward; and Charman, Bernard William, 3,828,603.

Provancher, Ronald W.: *See—*
Eissinger, Ramon C.; and Provancher, Ronald W., 3,828,885.

Province, William F.; and Cooper, Wayne E., to Ridge Tool Company, The. Pipe alignment device. 3,828,413, Cl. 29-200.00p.

Prozorov, Vladimir Nikolaevich: *See—*
Krasnov, Mikhail Mikhailovich; Stelmakh, Mitrofan Fedorovich; Malyshev, Boris Nikolaevich; Prozorov, Vladimir Nikolaevich; Saprykin, Pavel Ivanovich; and Batrukova, Maria Grigorievna, 3,828,788.

Pugh, Charles D., to Burlington Industries, Inc. Individual bobbin spindle stop motion for a twister. 3,828,540, Cl. 57-81.000.

Pullman Incorporated: *See—*
Peterson, William H., 3,828,948.
Quartulli, Orlando J., 3,828,474.

Purath, Bernd, to Demag Aktiengesellschaft. Railway vehicle. 3,828,691, Cl. 105-145.000.

Purdy, David L., to ARCO Nuclear Company, mesr.e. Self-contained artificial heart. 3,828,371, Cl. 3-1.000.

Pursley, Reedy Thomas. Portable syphonic pump. 3,829,249, Cl. 417-411.000.

Pyrocom, Inc.: *See—*
Atkin, Robert F., 3,828,701.

Qonaar Corporation: *See—*
Bock, Walter R., 3,828,907.

Qualley, Ray W.; and Thompson, Robert L., to Modine Manufacturing Company. Dual fuel burner apparatus. 3,829,279, Cl. 431-354.000.

Quarisa, Armando: *See—*
Roano, Domenico; and Quarisa, Armando, 3,828,909.

Quartulli, Orlando J., to Pullman Incorporated. Process for producing high strength reducing gas. 3,828,474, Cl. 48-214.000.

Quick, Graeme R., to Iowa State University Research Foundation. Vortex fan means for a crop gathering apparatus. 3,828,531, Cl. 56-12.900.

Raal, Frederick Anton: *See—*
Custers, Joseph Lambert Maria; and Raal, Frederick Anton, 3,828,848.

Raffenberg, Bruno, to Hoesch Maschinenfabrik Deutschland Aktiengesellschaft. Device for rerailing rail vehicles. 3,828,689, Cl. 104-273.000.

Ragot, Raymond, to Speichim. Process for the smokeless burning of residues, and apparatus therefor. 3,828,700, Cl. 110-7.00s.

Rakuson, George: *See—*
Nichols, Ronald A.; and Rakuson, George, 3,828,717.

Ramazzotti, Dario J.: *See—*
Carillon, Frank R.; Meyer, William E.; and Ramazzotti, Dario J., 3,829,272.

Rammelt, Peter-Paul; and Siegemund, Gunter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of trifluoroacetyl chloride. 3,829,483, Cl. 260-544.00y.

Rank Organisation Limited, The: *See—*
Willis, John Robert; and Urquhart-Pullen, David Ian, 3,829,623.

Ranno, Carl P.: *See—*
Sutton, Lawrence R.; Ranno, Carl P.; and Hewson, Kenneth E., 3,828,391.

Ransburg Electro-Coating Corporation: *See—*
Scharfenberger, James A., 3,829,016.

Raschle, Josef, to Heberlein & Co. AG. Friction false-twist device. 3,828,541, Cl. 57-106.000.

Rassaerts, Heinz, to Chemische Werke Huls Aktiengesellschaft. Method for the separation of methallyl sulfonate. 3,829,472, Cl. 260-513.00b.

Ratner, Lev Semenovich: *See—*
Truskanov, David Matveevich; Brunin, Kirill Rudolfovich; and Ratner, Lev Semenovich, 3,829,864.

Ratnik, H. Ronald. Snow making apparatus. 3,829,013, Cl. 239-14.000.

Rattle, Jeffrey Douglas: *See—*
Allan, William Bell; Rattle, Jeffrey Douglas; and Atkinson, Arthur Gordon, 3,829,857.

Ratts, Kenneth Wayne, to Monsanto Company. Plant regulation with 2-halo-2',6'-disubstituted -N-amidomethyl-acetanilides. 3,829,306, Cl. 71-76.000.

Raue, Roderich; and Dorsch, Hans-Lothar, to Bayer Aktiengesellschaft. Benzimidazoline arylhydrazone dyestuffs. 3,829,418, Cl. 260-240.00g.

Raue, Roderich; Kruckenberg, Winfried; and Rohe, Ernst-Heinrich, to Bayer Aktiengesellschaft. Dyestuffs and process for their production. 3,829,461, Cl. 260-465.00d.

Rauer, Heinz Gunter: *See—*
Kirschner, Peter; and Rauer, Heinz Gunter, 3,829,119.

Raupach, Friedrich. Gas filled measuring condenser. 3,829,744, Cl. 317-244.000.

Raviv, Samuel. Electrolytic polishing of metals. 3,829,367, Cl. 204-129.950.

Rawson, Eric Gordon, to Bell Telephone Laboratories, Incorporated. Optical couplers. 3,829,195, Cl. 350-96.00r.

Ray, Louis Z. Turn lean restricter for motorcycles. 3,829,110, Cl. 280-8.000.

Raymond, John G., Jr. Surveying tape tensioning and leveling apparatus. 3,828,438, Cl. 33-137.00r.

Raytheon Company: *See—*
Barrett, Harrison H., 3,829,688.

RCA Corporation: *See—*
Beyers, Billy Wesley, Jr., 3,829,612.
Freedman, David Daniel, 3,829,853.
Goyer, Ronald Bruce, 3,829,716.
Schopp, James Conrad; and Stave, Frederick Roland, 3,829,611.
Warren, Henry Ray, 3,828,996.

Read, Brian. Pressure-monitoring relief valve. 3,828,812, Cl. 137-557.000.

Reagan, Donald W.: *See—*
Mishcon, Lester; and Reagan, Donald W., 3,828,581.

Reash, Clair W.; and Pietrasz, Vincent, to Union Carbide Corporation. Getter assembly. 3,829,730, Cl. 313-174.000.

Reba, Imants; and Wolthausen, Edward C., to Crown Zellerbach Corporation. Gasification system. 3,829,070, Cl. 261-77.000.

Redding, Harry L., Jr., to General Motors Corporation. Vehicle suspension system. 3,829,120, Cl. 280-124.00b.

Reddy, K. Narashimha, to Fairbanks Morse Inc. Flywheel magneto ignition system. 3,828,753, Cl. 123-148.00r.

Redmon, Don L.: *See—*
Fussell, Edward B., Jr.; and Redmon, Don L., 3,829,153.

Reed, Edward L., to North American Rockwell Corporation. Method of massively hydriding zirconium-uranium alloy. 3,829,552, Cl. 423-255.000.

Regie Nationale des Usines Renault: *See—*
Chevret, Remy, 3,829,184.
Miokovic, Stevan, 3,829,176.

Regie Nationale Des Usines Renault Billancourt: *See—*
Cailltel, Pierre; and Dresser, Bruno, 3,828,649.
Roger, Yves, 3,828,628.

Rehm, Roger P., to Bauer Corporation. Multiple accessory attachment for ladders. 3,828,889, Cl. 182-107.000.

Reichert, C., Optische Werke AG: *See—*
Lechner, Gunther, 3,828,571.

Reichert, Donald G., to ABC Packaging Machine Corporation. Method of folding a box blank. 3,828,659, Cl. 93-49.00m.

Reimann, Gerhard: *See—*
Jenne, Oswald; Steinkuhl, Josef; Wiechmann, Otto; and Reimann, Gerhard, 3,829,280.

Reiter, Robert C., to Material Control, Inc. Aerating device for pulverulent material. 3,829,022, Cl. 239-288.500.

Reliance Electric Company: *See—*
Means, David K., 3,829,845.

Remmert, Hans-Jurgen, to Koepp Aktiengesellschaft. Process for laminating a foam plastics material with a sheet-like material. 3,829,343, Cl. 156-322.000.

Research Corporation: *See—*
Beale, William T., 3,828,558.
Vanderklaauw, Peter M., 3,828,513.

Retallack, Robert L. Electric railroad system with elevated conductor alongside the track. 3,829,631, Cl. 191-66.000.

Rettig, Charles E., to Allis, Louis, Company, The. Compensated adjustable frequency power supply of the inverter type. 3,829,754, Cl. 321-2.000.

Reuschel, Konrad: *See—*
Dietze, Wolfgang; Reuschel, Konrad; and Stut, Hans, 3,828,726.

Reuter, James L.; and Sandhu, Jagtar S., to Cogar Corporation. Apparatus for producing ion-free insulating layers. 3,828,722, Cl. 118-48.000.

Rexnord Inc.: *See—*
Bradbury, Bernard G., 3,828,688.

Reynolds Leasing Corporation, mesne: *See—*
Neumann, Calvin L.; and Best, Freddie W., 3,828,797.

Reynolds, R. J. Tobacco Company: *See—*
Schumacher, Joseph N.; and Green, Charles R., 3,828,795.

Reynolds, R.J., Tobacco Company: *See—*
Pinkham, Jesse R., 3,828,662.

Reznicek, Frank. Tractor wheel dolly. 3,828,953, Cl. 214-332.000.

Rheinstahl AG: *See—*
Jenne, Oswald; Steinkuhl, Josef; Wiechmann, Otto; and Reimann, Gerhard, 3,829,280.

Rhode-Poulenc S.A.: *See—*
Bourat, Guy, 3,829,370.

Ricci, Vero: *See—*
Shorin, Joseph E.; and Ricci, Vero, 3,828,995.

Rice, James S.: *See—*
Eickelberg, John E.; and Rice, James S., 3,829,848.

Rice, Leonard M., to Tri-Kem Corporation. Therapeutic composition and method for its use. 3,829,569, Cl. 424-232.000.

Rice, Walter W.: *See—*
Jensen, Reed J.; Rice, Walter W.; and Beattie, Willard H., 3,829,793.

Rich, Scott Rayfield. Frame assembly for mobile structures. 3,829,115, Cl. 280-34.00a.

Rich, Wolfgang, to Eberspacher, J. Space heater construction particularly for motor vehicles. 3,828,761, Cl. 126-90.00r.

Richards, Hugh C., to Pfizer Inc. Hexahydro pyrazinoquinolines as anti-schistosomal agents. 3,829,573, Cl. 424-250.000.

Richards, James C.: *See—*
Trescott, Edward B.; and Richards, James C., 3,829,480.

Richardson, Edwin A.: *See—*
Templeton, Charles C.; Street, Evan H., Jr.; and Richardson, Edwin A., 3,828,854.

Richardson, George T.: *See—*
Moore, William H.; Richardson, George T.; and Pease, Floyd T., 3,828,561.

Richardson Merrell Inc.: *See—*
Fleming, Robert W.; and Carr, Albert A., 3,828,578.

Richardson-Merrell Inc.: *See—*
Carr, Albert A.; Kinsolving, C. Richard; and Meyer, Donald R., 3,829,433.
Carr, Albert A.; and Grunwell, Joyce F., 3,829,440.
Fleming, Robert W.; and Carr, Albert A., 3,829,578.

Richt, Hubert, to Siemens Aktiengesellschaft. Direct-current motor with permanent-magnet rotor and sequentially energized stator windings. 3,829,749, Cl. 318-331.000.

Richter, Calvin; and Van Wyck, William E., 20% to Lee, Raymond, Organization, Inc., The. Fire escape and fire fighting capsule. 3,828,858, Cl. 169-62.000.

Richter, Heinz, to Loewe Opta GmbH. Circuit arrangement for establishing a constant potential of the chassis of an electrical device with relation to ground. 3,829,705, Cl. 307-94.000.

Richter, Reinhard H.; and Ulrich, Henri, to Upjohn Company, The. 4-Azidocarbonylphthalic anhydride, 4-isocyanatophthalic anhydride, and 4-lower alkoxycarbonamido phthalic anhydride. 3,829,444, Cl. 260-346.300.

Ricoh Co., Ltd.: *See—*
Abe, Takeshi, 3,829,188.

Ridge Tool Company, The: *See—*
Province, William F.; and Cooper, Wayne E., 3,828,413.

Riedel, Wolfgang, to Bosch, Robert, GmbH. Switch actuating arrangement for use in motion picture projectors or the like. 3,829,204, Cl. 352-124.000.

Riegel Textile Corporation: *See—*
Goodbar, Reid C.; and Pressley, Arther Mitchell, 3,828,543.

Rieger, Hans Wolfhart: *See—*
Kugler, Tibor; and Rieger, Hans Wolfhart, 3,829,374.

Riesenberg, Klaus-Otto: *See—*
Von Loewis of Menar, Alexander; and Riesenberg, Klaus-Otto, 3,829,166.

Rigassi, Norbert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,829,577.

Riggs & Lombard, Inc.: *See—*
Holm, William J., 3,828,587.

Riha, Miloslav: *See—*
Cernocky, Jiri; Riha, Miloslav; and Martinec, Josef, 3,828,828.

Rinklin, Hermann: *See—*
Doschko, Werner; and Rinklin, Hermann, 3,828,537.

Rion Kabushiki Kaisha: *See—*
Yao, Ching-Chun; and Tsuchiya, Hitoshi, 3,829,263.

Rist, Michel, to Societe Anonyme Francaise du Ferodo. Assisted steering control with automatic return, especially for automobile vehicles. 3,828,883, Cl. 180-79.20r.

Ritter, Gerhard: *See—*
Boyer, Wilhelm; Ritter, Josef; and Ritter, Gerhard, 3,828,416.

Ritter, Josef: *See—*
Boyer, Wilhelm; Ritter, Josef; and Ritter, Gerhard, 3,828,416.

Riva Calzoni S.p.A.: *See—*
Ortelli, Aurelio, 3,828,808.

River, Charles, Foundation: *See—*
Merrill, Edward W. (Estin, Hans H.; Cronkhite, Leonard W., Jr.; and Wolbach, William W., Trustees of the), 3,828,801.

Roano, Domenico; and Quarisa, Armando, to Olivetti, Ing., C., & C., S.p.A. Code keyboard for typewriters and similar office machines. 3,828,909, Cl. 197-16.000.

Robandt, William F., II; and Clearman, Jack F., to Whirlpool Corporation. Dispenser for washing apparatus. 3,828,975, Cl. 222-70.000.

Robert Bosch GmbH: *See—*
Aldinger, Ulrich; Kersten, Gunter; and Knodel, Emil, 3,828,653.
Knapp, Heinrich, 3,828,749.

Roberts, Grant W. Crab trap. 3,828,461, Cl. 43-102.000.

Robertshaw Controls Company: *See—*
Scott, Douglas R., 3,829,011.

Robertson, H. H., Company: *See—*
Vezmar, Alexander G., 3,828,493.

Robertson, Louis A.: *See—*
Testerman, Joseph E.; and Robertson, Louis A., 3,828,645.

Robertson Paper Box Company, Inc.: *See—*
Hackenbert, Robert A.; Tyrseck, Walter J.; and Berry, Chapman, 3,829,005.

Robertson William Neil, to Imperial Chemical Industries Limited. Melt spinning of polymers. 3,829,543, Cl. 214-78.000.

Robinson, Gene C., to Ethyl Corporation. Detergent builder and sequestering agent. 3,829,383, Cl. 252-89.000.

Robinson, John A.: *See—*
Furon, Leon D.; Robinson, John A.; and Menick, Jack E., 3,828,609.

Robinson, John E.: *See—*
Drummond, Michael E.; and Robinson, John E., 3,828,987.

Roch, Gerald V., to Hurco Manufacturing Company, Inc. Shear mounting for corner shearing machine. 3,828,639, Cl. 83-390.000.

Rockwell, Edward A.; and Holland, Harvison C. Anti-skid brake system. 3,829,170, Cl. 303-21.0cg.

Rockwell, Edward A. Skid control system components. 3,829,171, Cl. 303-24.00c.

Rockwell International Corporation: *See—*
Minney, Jack L., 3,829,795.
White, Stanley A., 3,829,780.

Roderick, Olsen, Jr., to Kockum Industries Incorporated. Log-sorting apparatus. 3,828,928, Cl. 209-74.00r.

Roesch, George R.: *See—*
Highberg, Carle W.; and Roesch, George R., 3,828,479.

Roetter, Martyn F.: *See—*
Nicol, James; Shapiro, Sidney; and Roetter, Martyn F., 3,829,768.

Roger, Yves, to Regie Nationale Des Usines Renault Billancourt and Automobiles Peugeot. Methods of extruding helical gear blanks. 3,828,628, Cl. 76-107.00r.

Rogers, Charles J.; and Coleman, W. Emile, to United States of America, Environmental Protection Agency. Process for the production of high quality fungal protein from starch and starchy processing wastes. 3,829,363, Cl. 195-32.000.

Rogers Corporation: *See—*

Iosue, Michael F.; and Sanders, Robert E., 3,829,818.
Kask, Eugene, 3,828,968.
Rogers, Gerald L., to Chemetron Corporation. Lamp head assembly. 3,829,679, Cl. 240-52.00r.
Rohe, Ernst-Heinrich: *See*—
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Rohm & Haas Company: *See*—
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Graff, Robert Martin, 3,829,531.
Miller, George A.; and Greenfield, Stanley A., 3,829,492.
Weir, William David, 3,829,419.
Rohrmuller, August. Ball type game. 3,829,097, Cl. 273-125.00r.
Rolair Systems, Inc.: *See*—
Burdick, Robert E., 3,828,884.
Burdick, Robert E., 3,829,116.
Roldugin, Vladimir Ivanovich: *See*—
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Ronzio, Richard A.; Lane, John W.; and Vincent, John D., to American Metal Climax, Inc. Process for making high purity molybdenum oxide and ammonium molybdate. 3,829,550, Cl. 423-54.000.
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Rose, Ralph B. Car top advertising stand. 3,828,456, Cl. 40-129.00c.
Rosenberger, Michael: *See*—
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Rosenthal, Fracis Joseph, Jr.; and Grieb, Dale Christian, to Black and Decker Manufacturing Company. Fan mounting assembly. 3,829,722, Cl. 310-50.000.
Rosenthal, Francis Joseph, Jr., to Black and Decker Manufacturing Company, The. Air flow baffle construction for electric motor devices. 3,829,721, Cl. 310-47.000.
Rosenthal, Henry, to Amchem Products, Inc., mesne. Method of making sponge propellant. 3,829,537, Cl. 264-3.00r.
Rossel UCLAT: *See*—
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Rotax Limited: *See*—
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Roth, Eric Michael. Rug care implement. 3,828,386, Cl. 15-105.000.
Roth, Oscar, to Involvo AG. Dispensing device with abrupt ejection terminating means. 3,828,986, Cl. 222-375.000.
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Talbat, Richard C.; Rose, Edward; and Roth, Robert A., 3,828,918.
Rothman, Evelyn Lorraine. Method for withdrawing menstrual fluid. 3,828,781, Cl. 128-278.000.
Rothstein, Milton; Kaplan, Martin; and Barton, Lloyd, to Solidyne, Inc. Dielectric sealing apparatus. 3,829,341, Cl. 156-380.000.
Rouf, Edgar J.; and Booher, Harold R., to Goodyear Tire & Rubber Company, The. Automatic deceleration control system. 3,829,167, Cl. 303-21.0cg.
Roussel-Uclof: *See*—
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Rovel, Jean-Marie, to Degremont Societe Generale d'Epuration et d'Assainissement. Device for removing floated material in flotation processes. 3,828,935, Cl. 210-523.000.
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Rudolph, Werner; and Massonne, Joachim, to Kali-Chemie Aktiengesellschaft. Process for separating perfluoroalkyliodide telomers. 3,829,511, Cl. 260-653.0it.
Ruggiero, Edward M.: *See*—
Ensminger, Clifford H.; and Ruggiero, Edward M., 3,829,653.
Ruhl, Hermann. Pen chart analyser. 3,829,660, Cl. 235-61.60a.
Rupert, William A. Automatic valve adapter. 3,829,059, Cl. 251-26.000.
Rusco Industries, Inc.,: *See*—
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Russ, Paul E., Sr., to Gates Rubber Company, The. Mold for locating transverse reinforcements in endless track. 3,829,055, Cl. 249-91.000.
Russell, Charles W. Wing genoa jib. 3,828,711, Cl. 114-103.000.
Russell, Robert G., to Owens-Corning Fiberglas Corporation. Method for preventing flooding of glass fiber bushings. 3,829,301, Cl. 65-2.000.
Russo, Leonard. Mixing and dispensing device. 3,828,983, Cl. 222-190.000.
Rutkowski, John L., to Appleton Electric Company. Common ground stud module. 3,829,815, Cl. 339-14.00r.
Rutt, Truman C., to N L Industries, Inc. Sintered ceramic bodies with porous portions. 3,829,356, Cl. 161-161.000.
Rybicki, Robert C.; and Keller, Carl H., Jr., to United Aircraft Corporation. Multiple element journal bearing. 3,829,239, Cl. 416-134.000.
Rys, Tadeusz J., to Square D Company. Stored-energy operating mechanism for switch blades. 3,829,643, Cl. 200-153.0sc.
Ryswick, Edward L., to Varispace Industries, Inc. Force-responsive elastomeric gripper. 3,829,147, Cl. 294-93.000.
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Saito, Masaru; Hasegawa, Norio; and Murase, Kenaki, to Starting Industry Company Limited. Improved single lever remote control device for engines. 3,828,902, Cl. 192-.096.
Saito, Toshiaki; and Kobaysshi, Hisashi, to Kabushiki Kaisha Suwa Seikosha. Display setting means for time zone watch with calendar. 3,828,546, Cl. 58-42.500.
Saitoh, Torahiko: *See*—
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Sampson, Roy John; and Spencer, Christopher Buxton, to Imperial Chemical Industries Limited. Production of benzene. 3,829,519, Cl. 260-672.00r.
Samson, Wilfred Joseph, Jr., to Torin Corporation. Blower assembly. 3,829,250, Cl. 417-424.000.
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Sanford, Norman Ray; Wainscott, Alan Dale; and Skelton, Billy Keith, to Bendix Corporation, The. Closed loop grinder infeed control system w/automatic compensation for wheel diameter changes due to dressing operations. 3,828,477, Cl. 51-5.000.
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Santos, Manuel V. Surgical instruments. 3,828,791, Cl. 128-321.000.
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Sather, Delaine C., to Collins Radio Company. Serial binary square root apparatus. 3,829,672, Cl. 235-158.000.

Saucke, Heinz, to Weill & Reineke GmbH. Method and apparatus for tightening the water-submerged joints between wall-forming elements. 3,828,563, Cl. 61-60.000.

Saurer, Adolph, Ltd.: *See*—
Macho, Helmut, 3,828,824.

Sause, Henry, Jr. Extensible stanchion. 3,828,710, Cl. 114-75.000.

Scalzo, Augustine J.; and Hultgren, Kent G., to Westinghouse Electric Corporation. Turbine diaphragm seal structure. 3,829,233, Cl. 415-110.000.

Scarpino, John J., to Hope-Tronics, Limited. Circuit for switching D.C. power. 3,829,830, Cl. 340-81.00r.

Schadlich, Gunther; Haenisch, Renate; and Moraw, Roland, to Kalle Aktiengesellschaft. Methods of making half-tone prints. 3,829,315, Cl. 96-33.000.

Schaff, James C.: *See*—
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Scharfenberger, James A., to Ransburg Electro-Coating Corporation. Apparatus for spraying resin and expanded thermoplastic spheres. 3,829,016, Cl. 239-127.000.

Schaub, Fritz: *See*—
Schelling, Hans-Peter; and Schaub, Fritz, 3,829,442.

Schellhorn, Walter; and Koch, Edwin, to Seitz-Automaten GmbH. Automatic vending device for packaged containers such as bottles, cans or similar articles. 3,828,906, Cl. 194-59.000.

Schelling, Hans-Peter; and Schaub, Fritz, to Sandoz Ltd. Insecticidal 1,3-benzodioxol derivatives. 3,829,442, Cl. 260-340.500.

Scherbakov, Vsevolod Sergeevich: *See*—
Bykov, Alexandr Vasilievich; Scherbakov, Vsevolod Sergeevich; Sudarkin, Lev Alexandrovich; and Pavlov, Roman Vladimirovich, 3,829,255.

Schering Corporation: *See*—
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Scheunemann, Hans-Rudiger, to Kleinewefers Industrie-Compagnie GmbH. Mantle-radiation recuperator. 3,829,277, Cl. 431-109.000.

Schindler, Claude, to Zyma S.A. Dosing valve. 3,828,985, Cl. 222-207.000.

Schirman, Ananie, to Ateliers de Constructions Electriques de Charleroi (ACEC) Societe Anonyme. Reactive energy static compenstor to protect thyristor rectifiers. 3,829,736, Cl. 317-33.0sc.

Schladetsch, Hans Jakob, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for preparing N-mono-(beta-cyanoethyl) -arylamines. 3,829,454, Cl. 260-465.00e.

Schlegel Manufacturing Company, The: *See*—
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Schlesinger, Jefferson S.: *See*—
Phillips, Dale P.; and Schlesinger, Jefferson S., 3,829,590.

Schliemann, Louis F.; and Borgos, Jerome E. Structural module. 3,828,492, Cl. 52-36.000.

Schmerling, Louis, to Universal Oil Products Company. Polyhalosubstituted polyhydropolycyclic dicarboxylic acid and anahydride. 3,829,450, Cl. 260-346.300.

Schmid, Wolfgang: *See*—
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Schmidt, Ernst Machiel: *See*—
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Schmidt, Gunther, to Messerchmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Main stream liquid-fuel rocket engine construction and method of starting a liquid-fuel rocket engine. 3,828,551, Cl. 60-204.000.

Schmitt, Hubert A., to Boeing Company, The. Fatigue resistant fastener joint. 3,828,422, Cl. 29-525.000.

Schmitz, James E.: *See*—
Green, John S.; Luttrell, John E.; and Schmitz, James E., 3,828,934.

Schmolka, Irving R.; and Seizinger, Reinhold K., to Basf Wyandotte. Biodegradable surface active agents having good foam properties and foam stabilizing characteristics. 3,829,506, Cl. 260-615.00b.

Schnaibel, Eberhard; and Gotz, Werner, to Bosch, Robert, GmbH. Vehicle wheel brake anti-lock system. 3,829,168, Cl. 303-21.0be.

Schneer, Marcel, to Coleco Industries, Inc. Rotary swimming pool valve. 3,828,932, Cl. 210-169.000.

Schneider, Charles A., to Sherwin-Williams Company, The. Sythesis of alkynes by dehydrohalogenation. 3,829,522, Cl. 260-678.000.

Schneider, Felix: *See*—
Kampmann, Gerhard; and Schneider, Felix, 3,828,693.

Schneider, Winfried. Mosaic print head. 3,828,908, Cl. 197-1.00r.

Schnizler, Albrecht, Jr., to Metabowerke K.G., Closs, Rauch & Schnizler. Hammer drill. 3,828,865, Cl. 173-104.000.

Schoeb, John, to Brown & Williamson Tobacco Corporation. Pneumatic feeder for plural maker systems. 3,829,164, Cl. 302-28.000.

Schoeller, Alexander. Plastic bottle crates. 3,828,927, Cl. 206-511.000.

Schofield, John Michael Stuart, to U.S. Philips Corporation. Glow discharge display device. 3,829,734, Cl. 313-217.000.

Scholl, Charles H.: *See*—
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Scholler, Gerhart, to Orenstein & Koppel AG. Lifting arrangement for cantilever arms of conveyors. 3,828,913, Cl. 198-9.000.

Schopp, James Conrad; and Stave, Frederick Roland, to RCA Corporation. Disc playback system with speed control of a belt drive. 3,829,611, Cl. 178-6.60a.

Schott, Lawrence A.: *See*—
Schott, Roger A.; and Schott, Lawrence A., 3,828,890.

Schott, Roger A.; and Schott, Lawrence A. Cable lubricating device. 3,828,890, Cl. 184-15.00r.

Schrader, Herbert, to Volkswagenwerk Aktiengesellschaft. Two-way flap valve. 3,828,820, Cl. 137-625.400.

Schrimper, Vernon L., to Iowa Manufacturing Company. Hammer assemblies with reversible tips for hammermills. 3,829,032, Cl. 241-197.000.

Schroder, Gerd; and Meyer-Ebrecht, Dietrich, to U.S. Philips Corporation. Circuit arrangement for digital frequency measurement. 3,829,785, Cl. 328-130.000.

Schroder, Ludwig; Thomas, Klaus; and Goeth, Hanns, to Boehringer Ingelheim GmbH. (5-Nitro-2-furyl)-pyridines. 3,829,426, Cl. 260-297.00z.

Schroeder, Rolf: *See*—
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; and Schroeder, Rolf, 3,829,875.

Schubert, Egon: *See*—
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Schubert, Wolfgang: *See*—
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Schuette, Gunter G.; and Warner, William J., to Motorola, Inc. Overvoltage and electronic relay circuit for capacitor discharge ignition systems. 3,828,750, Cl. 123-148.tcp.

Schultz, Ward E.; Smith, Harry D., Jr.; and Arnold, Dan M., to Texaco Inc. Pulsed neutron logging system with gain compenstion. 3,829,686, Cl. 250-261.000.

Schumacher, Joseph N.; and Green, Charles R., to Reynolds, R. J. Tobacco Company. Tobacco product. 3,828,795, Cl. 131-17.000.

Schurman, Peter T., to Plastic Forming Company, Inc., The. Plastic container. 3,828,969, Cl. 220-315.000.

Schuster, Ludwig: *See*—
Horn, Peter; and Schuster, Ludwig, 3,829,458.

Schwantes, Herbert A., to Harnischfeger Corporation. Universally movable control lever assembly. 3,828,950, Cl. 214-138.00r.

Schwartz, Jacob, to Sanders Associates, Inc.,. Variable pulse laser. 3,829,791, Cl. 331-94.500.

Schwarz, Frank, to Barnes Engineering Company. Dual field of view intrusion detector. 3,829,693, Cl. 250-338.000.

Schwarz, Josef, to Bizerba-Werke Wilhelm Kraut KG. Scale. 3,828,870, Cl. 177-155.000.

Schweikart, Horst, to GEHAP Gesellschaft fur Handel und Patentverwertung mbH & Co., KG. Contactless relay with a field plate located in the magnetic field of a control coil. 3,829,719, Cl. 307-309.000.

Schweizer, John E., Jr.: *See*—
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Schweizer, William P., Jr., to Bonnot Co., The. Preparation of non-sticky cheese ribbons. 3,829,594, Cl. 426-516.000.

Schweizerische Lokomotiv-une Maschinenfabrik: *See*—
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Schwenker, David G.: *See*—
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Schwerdhofer, Hans-Joachim, to Fichtel & Sachs AG. Multiple-speed hub. 3,828,627, Cl. 74-750.00b.

Schwieter, Ulrich: *See*—
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,829,577.

Schwing, Friedrich. Squeeze pumps for delivering concrete. 3,829,251, Cl. 417-477.000.

Scientific Micro Systems, Inc.: *See*—
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Scott, Charles J., to Samsonite Corporation. Orientation sensitive luggage latch. 3,828,899, Cl. 190-41.00r.

Scott, Douglas R., to Robertshaw Controls Company. Pneumatic control system for a fuel burning apparatus or the like. 3,829,011, Cl. 236-82.000.

Scott, Eugene W., to Westinghouse Electric Corporation. Overflow control dashpot-type float for a dishwasher switch assembly. 3,829,636, Cl. 200-34.000.

Scott, Modesto Ochoa, to Humberto Viadas Enriquez. Hand operated variable speed reducers. 3,828,626, Cl. 74-689.000.

Scott Paper Company: *See*—
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Scott, William J., to Ideal Industries, Inc. Method of making a terminal. 3,828,706, Cl. 113-119.000.

Sea-Land Service, Inc.: *See*—
Gottlieb, Carl R.; and Campbell, Robert N., Jr., 3,829,145.

Searcy, Durward F.: *See*—
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Seiberling, Dale A., to Economics Laboratory, Inc. Continuous separating and standardizing of milk. 3,829,584, Cl. 426-231.000.

Seiersen, William K.: *See*—
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Seiko Koki Kabushiki Kaisha: *See*—
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Morinok Yukio, 3,829,874.
Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, 3,829,878.

Seip, Gunter, to Siemens Aktiengesellschaft. Switching arrangement for remote controlled electrical loads. 3,829,706, Cl. 307-147.000.
Seitz-Automaten GmbH: *See—*
Schellhorn, Walter; and Koch, Edwin, 3,828,906.
Seizinger, Reinhold K.: *See—*
Schmolka, Irving R.; and Seizinger, Reinhold K., 3,829,506.
Seki, Susumu: *See—*
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Sellmaier, Alfons, deceased: *See—*
Spies, Anton; Stephan, Alfred; and Sellmaier, Alfons, deceased, 3,828,564.
Sellmaier, Anne-Rose, co-heir: *See—*
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Semonsky, Miroslav: *See—*
Jelinek, Vaclav, deceased; Semonsky, Miroslav; Hartl, Jiri; and Borovansky, Alois, 3,829,473.
Senco Products Inc.: *See—*
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Senger, Edwin C.: *See—*
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Senn, Charles A., III; and Parker, Levi C., to Texaco Inc. Dehydrogenation process for converting N-paraffin hydrocarbon into N-olefin hydrocarbon. 3,829,524, Cl. 260-283.300.
Sennewald, Kurt: *See—*
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Sensorlok Corporation: *See—*
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Serad, George A.; and MacLean, Alexander F., to Celanese Corporation. Process for the production of peroxyacetic acid. 3,829,468, Cl. 260-502.00r.
Serikov, Jury Mitrofanovich: *See—*
Larjukhin, Grigory Artemovich; Chernyshev, Valentin Vasilievich; Nikitin, Vladislav Iosifovich; Serikov, Jury Mitrofanovich; and Kosinov, Vyacheslav Georgievich, 3,828,560.
Sfreddo, Alfred, to General Instrument Corporation. Tuner drice assembly with resetting fine tuning shaft. 3,828,613, Cl. 74-10.410.
Shaffer, William E.: *See—*
Close, Stanley Wayne; Cordovani, John J.; and Shaffer, William E., 3,829,619.
Shamlian, Ralph B.; and Hollingsworth, Ashley J., to Farallon Industries, Inc. Portable underwater indicating instrument for divers. 3,828,611, Cl. 73-300.000.
Shannon, John J. Safety bottle cap. 3,828,958, Cl. 215-9.000.
Shapiro, Sidney: *See—*
Nicol, James; Shapiro, Sidney; and Roetter, Martyn F., 3,829,768.
Sharbaugh, Joseph C. Automatic grit feed. 3,828,979, Cl. 222-129.000.
Sharpe, Raymond; and Triffit, James Christopher Herbert, to Rotax Limited. Constant speed hydraulically controlled tork transmission with concentric, two piston valve, governor and constant ratio means. 3,828,618, Cl. 74-200.000.
Shaver, Kenneth J.: *See—*
Kim, Keun Young; and Shaver, Kenneth J., 3,829,562.
Shaw, James Thomas; and Lilley, Raymond Percy Arthur, to Baker Perkins Limited. Finishing machine with a workpiece conveying system. 3,828,482, Cl. 51-121.000.
Shealy, Robert G., to PPG Industries, Inc. Bushing unit including cast iron bushing frame. 3,829,300, Cl. 65-1.000.
Sheffield, David John; Prosser, Paul Edward; and Charman, Bernard William, to Aerpat A.G., Zug. Riveting apparatus. 3,828,603, Cl. 72-391.000.
Shelffo, Loren E., to Addressograph-Multigraph Corporation. Photoelectrostatic developing materials. 3,829,314, Cl. 96-1.400.
Shelkovnikov, Jury Petrovich: *See—*
Turchaninov, Vasily Vasilievich; Shelkovnikov, Jury Petrovich; Machkov, Gennady Maximovich; and Korolev, Oleg Alexandrovich, 3,828,944.
Shell Oil Company: *See—*
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Singleton, David M., 3,829,523.
Templeton, Charles C.; Street, Evan H., Jr.; and Richardson, Edwin A., 3,828,854.
Wulff, Harald P., 3,829,392.
Shelledy, Frank B.: *See—*
Brock, George W.; Cannon, Maxwell R.; and Shelledy, Frank B., 3,829,896.
Shelton, Orville Allen, to Illinois Tool Works Inc. Method and apparatus for forming tips of screws. 3,828,604, Cl. 72-469.000.
Shelyakov, Oleg Parfirovich: *See—*
Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.
Shema, Bernard F.: *See—*
Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,829,305.
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. Slime control compositions and their use. 3,829,424, Cl. 424-263.000.
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. Slime control compositions and their use. 3,829,575, Cl. 424-263.000.
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. Slime control compositions and their use. 3,829,586, Cl. 424-329.000.
Sheppard, Ronald J., to Du Pont De Nemours, E. I., and Company. Acrylic coating composition for refinishing flexible substrates. 3,829,397, Cl. 260-31.80m.
Sherwin-Williams Company, The: *See—*
Schneider, Charles A., 3,829,522.
Shibata, Kazuo: *See—*
Gotoh, Miyuki; Mizuno, Yukio; and Shibata, Kazuo, 3,828,829.
Shiina, Toshio; and Midorikawa, Akira, to Kabushiki Kaisha Ricoh. Automatic original feed device for electrophotographic duplicating machine. 3,829,083, Cl. 271-4.000.
Shikoku Kakooki Co., Ltd.: *See—*
Ueda, Kazuo, 3,828,522.
Shimazaki, Yuzo: *See—*
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 3,829,555.
Shimizu, Kazuo: *See—*
Suzuki, Shigeyoshi; Kobayashi, Norio; and Shimizu, Kazuo, 3,829,319.
Shimizu, Tetuo; and Nishikawa, Akikazu, to Denki Kagaku Keiki Co., Ltd. Cell device for measuring electric conductivity of liquids. 3,829,761, Cl. 324-30.00b.
Shimoda, Yasunori, to Nissan Motor Company, Limited. Wear-resistant metal object and a method for the manufacture thereof. 3,829,260, Cl. 418-178.000.
Shimodaira, Takashi: *See—*
Kanetaka, Junichi; Shimodaira, Takashi; and Mori, Shoichiro, 3,829,448.
Shing, Fu, Mfg. & Lumber Co., Ltd.: *See—*
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Shinnittoku Denki Kabushiki Kaisha: *See—*
Makihara, Masuichi, 3,829,738.
Shiokawa, Kozo: *See—*
Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, 3,829,565.
Shippers Automation, Inc.: *See—*
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,828,690.
Shop-Rite Supermarkets, Inc.: *See—*
Cohen, Harold; and Noto, William L., 3,829,114.
Shorin, Joseph E.; and Ricci, Vero, to Aggogle Inc. Muffin separator. 3,828,995, Cl. 225-94.000.
Short, Thomas D.; and Marcum, Donald R., to International Telephone and Telegraph Corporation. Automatic line insulation routiner. 3,829,627, Cl. 179-175.20r.
Siddall, John B.; and Henrick, Clive A., to Zoecon Corporation. 4-(Oxoalkoxy)benzoic acids and ester thereof. 3,829,465, Cl. 260-473.00r.
Sidelinker, Wilson S. Method and apparatus for degassing aerosol cans and the like. 3,828,976, Cl. 222-83.500.
Sieber, Alexander; Kny, Hermann; and Oliver, Ward H., to Ciba-Geigy AG and Ciba-Geigy Corporation. Process for the production of 4,4'-dibromobinzil. 3,829,496, Cl. 260-590.000.
Siegemund, Gunter: *See—*
Rammelt, Peter-Paul; and Siegemund, Gunter, 3,829,483.
Siemag Siegener Maschinenbau G.m.b.H.: *See—*
Melcher, Robert, 3,829,266.
Siemens Aktiengesellschaft: *See—*
Dietze, Wolfgang; Reuschel, Konrad; and Stut, Hans, 3,828,726.
Grunleitner, Hans; Kuhnlein, Hans; and Liska, Manfred, 3,829,708.
Gudden, Friedrich; and Schubert, Wolfgang, 3,829,728.
Hockstetter, Werner, 3,829,756.
Huber, Walther; Hagen, Heinz; and Guglhor, Peter, 3,829,316.
Koch, Christian, 3,828,736.
Muller, Willi, 3,829,742.
Richt, Hubert, 3,829,749.
Seip, Gunter, 3,829,706.
Zuckler, Karl, 3,829,641.
Siemensma, Sidonius Volkert, to U.S. Philips Corporation. Temperature responsive control device. 3,828,559, Cl. 60-529.000.
Signetics Corporation: *See—*
Allison, David F.; and Maxwell, David A., 3,829,889.
Perloff, David S.; Kerr, John T.; and Marley, James A., 3,829,890.
Siler, Lawrence L. Electronic apparatus for detection and identification of energized and/or nonenergized electrical conductors. 3,829,765, Cl. 324-67.000.
Silk, Edmond J.; and Moore, Claude A., to Babcock & Wilcox Company, The. Fuel rod fabrication. 3,828,518, Cl. 53-12.000.
Silverman, Daniel; and Johnson, Everett A. Access control system. 3,829,661, Cl. 235-61.70b.
Simmonnet, Jacques Louis Paul: *See—*
Boy-Marcotte, Jean Louis; Simmonnet, Jacques Louis Paul; Marchal, Philippe Albert Hippolyte; and Verrien, Jean Prudent Fernand Rene, 3,828,574.

Simon, Karlheinz A., to Ingersoll-Rand Company. Drill rod handling apparatus. 3,828,943, Cl. 214-2.500.
Singer Company, The: *See—*
Brand, Arnold J.; and Sacks, Sidney M., 3,829,854.
Martines, Francis M.; and Spahr, Philip K., 3,829,752.
Mishcon, Lester; and Reagan, Donald W., 3,828,581.
Singh, Kanwal N.: *See—*
Malcosky, Norman D.; McLean, Ronald H.; Singh, Kanwal N.; and Auh, Chung M., 3,828,575.
Singleton, David M., to Shell Oil Company. Olefin disproportionation. 3,829,523, Cl. 260-683.00d.
Sinichkin, Sergei Gavrilovich: *See—*
Vragov, Jury Dmitrievich; Danyaev, Vladimir Egorovich; Trubin, Anatoly Petrovich; and Sinichkin, Sergei Gavrilovich, 3,828,647.
Sitte, Hellmuth, to C. Reichert Optische Werke AG. Apparatus for adjusting the elevation of a specimen in microtomes, particularly ultramicrotomes. 3,828,641, Cl. 83-703.000.
Sjogren, Bengt-Ake Harald: *See—*
Nilsson, Per-Erik; and Sjogren, Bengt-Ake Harald, 3,829,852.
Skarky, Floyd E. Table apparatus. 3,828,695, Cl. 108-26.000.
Skelton, Billy Keith: *See—*
Sanford, Norman Ray; Wainscott, Alan Dale; and Skelton, Billy Keith, 3,828,477.
SKF Industrial Trading and Development Company B.V.: *See—*
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Nilsson, Sven Walter, 3,829,726.
SKF Industries, Inc.: *See—*
Hingley, Colin G., 3,829,183.
Skone-Palmer, John R. Remotely operable trigger actuator. 3,828,458, Cl. 42-69.00r.
Skriletz, Rudolph A.; and Kendall, Virgil D., to Wallace-Murray Corporation. Method of maintaining the fluid permeability of a fired alumina, ball clay and talc fluid-release mold. 3,828,488, Cl. 51-319.000.
Slack, William Frederick, to Van Dyk Research Corporation. Web cutter. 3,828,637, Cl. 83-348.000.
Smagala-Romanoff, Edward A. Coded checks and in methods of coding. 3,829,133, Cl. 283-6.000.
SMC Corporation: *See—*
Eaton, John L.; and Eeckhout, Roger V., 3,828,452.
Smegal, Julius G.: *See—*
Perrin, Duane O.; and Smegal, Julius G., 3,828,403.
Smelyansky, Matvei Yakovlevich: *See—*
Olshansky, Nikolai Alexandrovich; Smelyansky, Matvei Yakovlevich; Lopatko, Anatoly Petrovich; Tkachev, Leonid Grigorievich; Kozhaev, Arkady Filippovich; Sapozhnikov, Alexandr Ivanovich; and Chernakov, Gennady Anatolievich, 3,829,651.
Smith, F., & Co., (Witworth) Limited: *See—*
Collinge, Robert Alan, 3,828,589.
Smith, George Cummingha, Jr.: *See—*
Abbott, Charles Theodoric, Jr.; and Smith, George Cummingha, Jr., 3,829,385.
Smith, George O., to General Motors Corporation. By-pass valve control. 3,829,294, Cl. 23-288.00f.
Smith, Harry D., Jr.: *See—*
Schultz, Ward E.; Smith, Harry D., Jr.; and Arnold, Dan M., 3,829,686.
Smith, Jerry L.; and Powling, Frank F., to Carlisle Corporation. Bridging push-button switch with plastic mating housing portions. 3,829,633, Cl. 200-16.00a.
Smith, Joseph D.: *See—*
Harris, Sterling G.; Smith, Joseph D.; McCall, David D.; Moore, Glenn S.; Hidden, William P.; and Svendsen, Noel, 3,828,398.
Smith Kline & French Laboratories: *See—*
Gardner, John Nicholson, 3,829,441.
Smith, Lawson A. Sawmill with adjustable guides and spreaders. 3,828,635, Cl. 83-102.100.
Smith, Layle V., to Dow Chemical Company, The. Foam plastic loose fill packing. 3,829,269, Cl. 425-308.000.
Smith, Richard A.; and Gutowski, Chester L., to Heinz, H. J., Company. Aseptic container filling apparatus. 3,828,833, Cl. 141-85.000.
Smith, Richard W., to Pratt Manufacturing Corporation. Rotary cutting apparatus. 3,828,636, Cl. 83-341.000.
Smith, William H. Vehicle power system. 3,828,880, Cl. 180-66.00r.
Smitzer, Louis A.; and Amtmann, Jurgen, to Ovonic Image Systems, Inc. Flash copier. 3,829,215, Cl. 355-113.000.
Smoot, Edward H., to Schlegel Manufacturing Company, The. Clothes dryer seal. 3,828,445, Cl. 34-242.000.
Snam Progetti, S.p.A.: *See—*
Mattucci, Anna Maria; and Perrotti, Emilio, 3,829,502.
Snow, Gerald A., to United Industrial Syndicate, Inc. Apparatus for positively conveying sheet materials. 3,828,997, Cl. 226-172.000.
Snyder, Dennis L.: *See—*
Halasa, Adel F.; and Snyder, Dennis L., 3,829,554.
Snyder, Ellery P. Method and apparatus for the examination of articles for defects. 3,829,690, Cl. 250-302.000.
Snyder, Stephen L. Riser controls for gliding parachutes. 3,829,045, Cl. 244-152.000.
Societe Anonyme Francaise du Ferodo: *See—*
Rist, Michel, 3,828,883.
Societe Anonyme Genoud & Cie: *See—*
Johnsson, Lars Bertil, 3,829,737.
Societe d'Applications Generales d'Electricite et de Mecanique: *See—*
Glay, Guy-Paul, 3,828,910.
Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
Condolios, Elie, 3,829,160.
Societe Pour l'Industrialisation du Material "Indumat": *See—*
Bournazel, Jacques, 3,829,053.
Societe Rhodiaceta: *See—*
Boutonnet, Alexandre; Clavelet, Georges; and Morieras, Gilbert, 3,828,542.
Soderstrom, Melvin A., to National Cash Register Company, The. Platen indexing actuator. 3,828,911, Cl. 197-114.00r.
Soehring, Gerhard; Moessner, Manfred; Kreutze, Gerhard; and Obstfelder, Guenther. Film projector, especially for teaching machines. 3,829,206, Cl. 352-160.000.
Soejima, Shigeo; Ohmura, Akira; and Watanabe, Koichiro, to NGK Insulators, Ltd. Glasslined product and a process for glasslining. 3,829,326, Cl. 117-70.00b.
Sofy, Hugh M. Dial index machine. 3,829,076, Cl. 269-57.000.
Soignet, Donald M.: *See—*
Berni, Ralph J.; Benerito, Ruth R.; and Soignet, Donald M., 3,829,290.
Sokol, David G.: *See—*
Marsh, Norman F.; Morand, Gary W.; and Sokol, David G., 3,829,772.
Solberg, Olav: *See—*
Bognaes, Ragnar; and Solberg, Olav, 3,828,709.
Solidyne, Inc.: *See—*
Rothstein, Milton; Kaplan, Martin; and Barton, Lloyd, 3,829,341.
Solitron Devices, Inc.: *See—*
Adams, Guy E., 3,828,751.
Solomon, David Henry: *See—*
Merry, Lorraine Anne; and Solomon, David Henry, 3,829,564.
Soloshenko, Nina Ivanovna: *See—*
Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.
Sommer, Neidhart; and Nordsiek, Karl-Heinz, to Chemische Werke Huls, AG. Block homopolymers of 1,3-butadiene and process for preparing them. 3,829,409, Cl. 260-94.20m.
Sony Corporation: *See—*
Arai, Michio, 3,829,882.
Sowerby, Austen Edgar; and Akred, Brian John, to Albright & Wilson Limited. Production of sulphonated material. 3,829,484, Cl. 260-545.00r.
Spacesaver Corporation: *See—*
Staller, Marvin A., 3,829,189.
Spademan, Richard G. Antifriction device. 3,829,112, Cl. 280-11.35c.
Spahr, Philip K.: *See—*
Martines, Francis M.; and Spahr, Philip K., 3,829,752.
Spanel, Abram N. Dry color applicator for hair. 3,828,802, Cl. 132-9.000.
Spang, Kjell: *See—*
Egerborg, Bo Malte Staffan; Gadefelt, Goran Robert; Magbjer, Gunnar Ingemar; and Spang, Kjell, 3,828,504.
Sparr, Anders V., Sr. Teat disinfecting cup for use after milking. 3,828,776, Cl. 128-248.000.
Special Metals Corporation: *See—*
Darmara, Falih N.; and Clark, I. Dwight, 3,829,538.
Specialty Instruments Corporation: *See—*
Balko, Jack E.; Moffatt, Davis F.; and Searcy, Durward F., 3,829,869.
Specialty Manufacturing Company: *See—*
Anderson, Arthur A., 3,828,817.
Speck, Walter. Centrifugal pumps composed primarily of plastic components. 3,829,238, Cl. 415-197.000.
Speichim: *See—*
Ragot, Raymond, 3,828,700.
Speiser, Jeffrey M.: *See—*
Byram, George W.; and Speiser, Jeffrey M., 3,829,798.
Speitschka, Ernst; and Landler, Josef, to Farbwerke Hoechst Aktiengesellschaft, vormals Meister Lucius & Bruning. Process for preparing compounds of the benzothioxanthene series. 3,829,439, Cl. 260-328.000.
Spellman, Francis T., to Symons Corporation. Power-actuated distributing conveyor system for a ready-mix concrete truck. 3,828,949, Cl. 214-83.260.
Spencer, Christopher Buxton: *See—*
Sampson, Roy John; and Spencer, Christopher Buxton, 3,829,519.
Spengler, Ernst Maximilian; and Stursberg, Rolf Karl, to Martin Miller Gesellschaft m.b.H. Cutting die and process. 3,828,631, Cl. 83-20.000.
Sperry Rand Corporation: *See—*
Butler, Gene R., 3,828,945.
Kroger, Harry, 3,829,886.
Spiegel, Jacob; and Miller, Albert R., said Miller assor. to Gilbreth Company. Decorative three-dimensional objects. 3,829,348, Cl. 161-16.000.
Spiegel, Richard G. Shipping and display carton and blank therefor. 3,829,006, Cl. 229-51.0ts.

Spies, Anton; Stephan, Alfred; and Sellmaier, Alfons, deceased (by Sellmaier, Anne-Rose, co-heir), to Linde A.G. Closed refrigerant cycle for the liquefaction of low-boiling gases. 3,828,564, Cl. 62-9.000.

Spinal position patient restraint: *See—*
Fox, Donald H., 3,829,079.

Spinner, George. HF coaxial plug connector. 3,829,800, Cl. 333-97.00r.

Spiroff, Carl M., 20% to Fenlon, Joseph A., Jr. Angiographic and arteriographic catherters. 3,828,767, Cl. 128-2.050.

Spodig, Heinrich. Apparatus for magnetically suppressing oscillations. 3,829,805, Cl. 335-289.000.

SPOFA, United Pharmaceutical Works: *See—*
Jelinek, Vaclav, deceased; Semonsky, Miroslav; Hartl, Jiri; and Borovansky, Alois, 3,829,473.

Spotnails, Inc.: *See—*
Perkins, Garry R., 3,828,924.

Square D Company: *See—*
Rys, Tadeusz J., 3,829,643.

S.R.C. Laboratories, Inc.: *See—*
Mocarski, Zenon R., 3,829,027.

Stabilus Industrie Und Handelsgellschaft MBG: *See—*
Dorner, Nikolaus; and Freitag, Herbert, 3,828,651.

Stables, Wilbur Leon: *See—*
Peckinpaugh, Frank Lee; Stables, Wilbur Leon; and Biron, Raymond Joseph, 3,828,404.

Stackman, Robert William: *See—*
Cohen, Stuart Lyle; and Stackman, Robert William, 3,829,405.

Staffe, Adolf; and Gerlach, Klaus, to Bayer Aktiengesellschaft. Perfluoroalkanesulphonamides. 3,829,466, Cl. 260-481.00r.

Stahnecker, Erhard: *See—*
Keppler, Hans-Georg; Zuern, Ludwig; and Stahnecker, Erhard, 3,829,378.

Staller, Marvin A., to Spacesaver Corporation. Motorized mobile shelving apparatus. 3,829,189, Cl. 312-198.000.

Stam Instruments Corp.: *See—*
Blustain, Stanley, 3,829,328.

Stanadyne, Inc.: *See—*
Davis, Charles W.; and Roosa, Vernon D. (said Davis assor. to), 3,829,014.

Stanbridge, Roger Philip, to Foseco International Limited. Hardening of refractory/sodium silicate mixtures. 3,829,320, Cl. 106-84.000.

Standard Brands Incorporated: *See—*
Horwath, Robert Otto; and Cole, Gary William, 3,829,362.

Standard Oil Company: *See—*
Wennerberg, Arnold N., 3,829,518.

Standard Oil Company, The: *See—*
Meloy, Gilbert K.; and Farrington, Diane G., 3,829,532.

Stants, Richard O.: *See—*
Hutchinson, Don W.; Kniesly, Richard A.; and Stants, Richard O., 3,829,828.

Starting Industry Company Limited: *See—*
Saito, Masaru; Hasegawa, Norio; and Murase, Kenaki, 3,828,902.

Stauffer Chemical Company: *See—*
Baker, Don R., 3,829,486.
Lengnick, Guenther Fritz, 3,829,527.
Lengnick, Guenther Fritz, 3,829,529.
Mihailovski, Alexander, 3,829,307.

Stauffer, Reuben L., to Bendix Corporation, The. Means for providing thermocouple failure detection in a multiple probe system. 3,829,849, Cl. 340-248.00e.

Stave, Frederick Roland: *See—*
Schopp, James Conrad; and Stave, Frederick Roland, 3,829,611.

Stearns, Gabriel E., to Boeing Company, The. Translating sleeve variable area nozzle and thrust reverser. 3,829,020, Cl. 239-265.130.

Stebe, Robert F., to VRC California Inc. Cartridge clamp. 3,829,897, Cl. 360-133.000.

Stedman, Robert N., to Caterpillar Tractor Co. Sealed pin joint for track assemblies. 3,829,173, Cl. 305-11.000.

Steenbeck, Ulf; and Weidinger, Hans, to Messerschmitt-Bolkow-Blohm GmbH. Magnetic guide for a rail-way vehicle. 3,828,686, Cl. 104-148.0ms.

Stehle, Randall G.; and Oesterling, Thomas O., to Upjohn Company, The. Stable solutions of PGE-type compounds. 3,828,579, Cl. 424-312.000.

Stehle, Randall G.; and Oesterling, Thomas O., to Upjohn Company, The. Stable solutions of PGE-type compounds. 3,829,579, Cl. 424-312.000.

Steiger A.G.: *See—*
Graser, Adalbert, 3,829,004.

Steigerwald, Carl J., to VCA Corporation. Safety actuated for aerosol containers. 3,828,982, Cl. 222-153.000.

Stein, Hermann: *See—*
Ottmar, Paul; and Stein, Hermann, 3,828,509.

Stein, Lawrence, to United States of America, Atomic Energy Commission. Atmosphere purification on xenon, radon & radon daughter elements. 3,829,551, Cl. 423-210.000.

Stein, Robert E., to Glass Lined Water Heater Co., The. Hot water heater. 3,828,847, Cl. 165-76.000.

Steinberg, William, to Computer Performance Instrumentation Incorporated. Computer monitoring device. 3,829,841, Cl. 340-172.500.

Steinkuhl, Josef: *See—*
Jenne, Oswald; Steinkuhl, Josef; Wiechmann, Otto; and Reimann, Gerhard, 3,829,280.

Stelmakh, Mitrofan Fedorovich: *See—*
Krasnov, Mikhail Mikhailovich; Stelmakh, Mitrofan Fedorovich; Malyshev, Boris Nikolaevich; Prozorov, Vladimir Nikolaevich; Saprykin, Pavel Ivanovich; and Batrukova, Maria Grigorievna, 3,828,788.

Stephan, Alfred: *See—*
Spies, Anton; Stephan, Alfred; and Sellmaier, Alfons, deceased, 3,828,564.

Sterling Drug, Inc.: *See—*
Collins, Joseph C., 3,829,475.
Copa, William M.; and Pradt, Louis A., 3,828,525.

Stern, Arthur M.: *See—*
Lange, K. Robert; Stern, Arthur M.; Gasner, Lawrence L.; and Hsu, Yuan Tsun, 3,829,388.

Stetter, Georg; and Pieper, Eberhard. Pump for concrete and the like. 3,829,254, Cl. 417-517.000.

Stevens, F. Bradley, to L & L Products, Inc. Beam construction. 3,829,149, Cl. 296-28.00r.

Stevens, Harold E., to Coaxial Dynamics, Inc. Directional coupler for transmission lines. 3,829,770, Cl. 324-95.000.

Stewart, Harry M. Counter fixture. 3,829,187, Cl. 312-140.100.

Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., to Shippers Automation, Inc. Portable railway car mover. 3,828,690, Cl. 105-90.00a.

Stewart, Thomas D.: *See—*
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,828,690.

Stewart, Victor E., Jr., to McGraw-Edison Company. Multi-signal encoder and transponder. 3,829,835, Cl. 340-151.000.

Stimson, Ian Leonard; Dowell, Frederick Sidney; and Healy, Benedict Pascal, to Dunlop Limited. Wheel assemblies. 3,829,162, Cl. 301-6.00a.

Stoller, Benjamin B., to Stroller Research Co. Mushroom spawn and method of making same. 3,828,470, Cl. 47-1.400.

Stone & Webster Engineering Corporation: *See—*
Green, Ellis J., 3,829,521.

Stoneburner, Jerry L. Coil rack. 3,829,148, Cl. 296-3.000.

Storer, Barrie William, to Burgess Products Company Limited. False ceiling systems. 3,828,507, Cl. 52-484.000.

Storlie, Llewellyn O., to Deco Products Company. Lock handle. 3,829,139, Cl. 292-349.000.

Stranahan, John J.; Hollier, John C. L.; and Deloney, Hugh C., to Texaco, Inc. Smokeless gas flare. 3,829,275, Cl. 431-4.000.

Straus, Andrew J. D., to Mobil Oil Corporation. Logging cable connector. 3,829,814, Cl. 339-14.00r.

Strebel, Elwood L. Organic thermotropic nematic compounds. 3,829,491, Cl. 260-566.00f.

Street, Evan H., Jr.: *See—*
Templeton, Charles C.; Street, Evan H., Jr.; and Richardson, Edwin A., 3,828,854.

Strick Corporation: *See—*
Yurgevich, Howard, 3,828,476.

Strini, Jean-Claude, to Produits Chimiques Pechiney-Saint-Gobain. Process for the preparation of acid chlorides and their acids. 3,829,477, Cl. 260-539.00r.

Stroller Research Co.: *See—*
Stoller, Benjamin B., 3,828,470.

Stromberg-Carlson Corporation: *See—*
Close, Stanley Wayne; Cordovani, John J.; and Shaffer, William E., 3,829,619.

Strong, Philip L.; Hunter, Don L.; and Le Fevre, Cecil W., to United States Borax & Chemical Corporation. Alkoxy trifluoromethylaniline compounds and use as an herbicide. 3,829,308, Cl. 71-121.000.

Struttmann, Hilarius S., to Borg-Warner Corporation. Bearing construction. 3,829,182, Cl. 308-194.000.

Strybel, Richard V., to Imperial-Eastman Corporation. Adjustable clamping means. 3,829,077, Cl. 269-107.000.

Studer, Willi. Tape recording transport control system. 3,829,038, Cl. 242-190.000.

Studtmann, George H., to Borg-Warner Corporation. AC-DC generating system. 3,829,758, Cl. 322-28.000.

Stursberg, Rolf Karl: *See—*
Spengler, Ernst Maximilian; and Stursberg, Rolf Karl, 3,828,631.

Stut, Hans: *See—*
Dietze, Wolfgang; Reuschel, Konrad; and Stut, Hans, 3,828,726.

Stutz, Robert C., to Niagara Blower Company. Heat exchange apparatus. 3,828,570, Cl. 62-282.000.

Stutzke, Paul: *See—*
Ohorodnik, Alexander; Sennewald, Kurt; Hundeck, Joachim; and Stutzke, Paul, 3,829,478.

Substrate Inc.: *See—*
Merrit, Charles, 3,828,520.

Suchy, Milos: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,829,577.

Sudarkin, Lev Alexandrovich: *See—*
Bykov, Alexandr Vasilievich; Scherbakov, Vsevolod Sergeevich; Sudarkin, Lev Alexandrovich; and Pavlov, Roman Vladimirovich, 3,829,255.

Sugar Cane Growers Cooperative of Florida: *See—*
Fowler, Larry G., 3,828,536.

Sugland, Wolfgang; and Kochs Adler, AG. Template. 3,828,703, Cl. 112-121.150.

Suladze, Ippolit Davidovich: *See—*

Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich; Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich, 3,829,042.

Sullivan, Donald E. Tape applicator. 3,829,346, Cl. 156-527.000.

Sulzer Brothers Ltd.: *See—*
Frei, Paul, 3,828,738.
Hurzeller, Rene; Vinnemann, Antonius; and Doslik, Peter, 3,828,826.

Sumitomo Chemical Company: *See—*
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,829,420.

Sumitomo Electric Industries, Ltd.: *See—*
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Sundstrand Corporation: *See—*
Lenski, Robert J.; and Meyer, James H., 3,829,276.

Sunouchi, Akio: *See—*
Aizawa, Hiroshi; Sunouchi, Akio; and Ogiso, Mitsutoshi, 3,829,868.

Sussman, Ernst. Seal structure. 3,829,103, Cl. 277-74.000.

Sutton, Lawrence R.; Ranno, Carl P.; and Hewson, Kenneth E., to Performance Industries, Inc. Tackless carpet stripping. 3,828,391, Cl. 16-16.000.

Sutton, Max E., to Allis-Chalmers Corporation. Quick hitch adapter. 3,829,128, Cl. 280-461.00a.

Sutton, Michael Gilbert; and Gailes, Michael Edward, to British Domestic Appliances Limited. Improvements in or relating to an electric generator with adjustable eccentric member for varying the output voltage. 3,829,724, Cl. 310-67.00r.

Suzuki, Hisao: *See—*
Miyasaki, Norihiko; Ishii, Minoru; Sakurai, Hiroji; Suzuki, Hisao; Nagatsumo, Katsuyoshi; and Furukawa, Hitoshi, 3,829,228.

Suzuki, Isamu: *See—*
Ishida, Shinichi; Oshima, Noboru; Kurita, Kunio; Suzuki, Isamu; and Ohno, Hidetoshi, 3,829,379.

Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Direction indicator automatic return device for turn indicator switches. 3,829,638, Cl. 200-61.270.

Suzuki, Shigeyoshi; Kobayashi, Norio; and Shimizu, Kazuo, to Mitsubishi Paper Mills, Ltd. Wetting liquid composition for offset master plate. 3,829,319, Cl. 106-2.000.

Suzuki, Shizuo: *See—*
Watanabe, Teruji; Fukui, Takasuke; and Suzuki, Shizuo, 3,829,894.

Suzuki, Takashi: *See—*
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Svendsen, Noel: *See—*
Harris, Sterling G.; Smith, Joseph D.; McCall, David D.; Moore, Glenn S.; Hidden, William P.; and Svendsen, Noel, 3,828,398.

Svensson, Uno. Method of crimping a socket to a rod formed of aluminum material. 3,828,420, Cl. 29-517.000.

SVIT, narodni podnik: *See—*
Jancik, Frantisek; and Polach, Josef, 3,828,385.

Swallow, Roger T. Elastic stocking with a split adjustable thigh panel. 3,828,369, Cl. 2-23.900.

Swanke, Roy L.; and Leonard, Robert M., to Dynamics Corporation of America. Motor stator. 3,829,720, Cl. 310-43.000.

Swearingen, Judson S. Thrust measurement. 3,828,610, Cl. 73-140.000.

Swered, Paul: *See—*
Brink, Robert H., Jr.; Shema, Bernard F.; Justice, Roger L.; and Swered, Paul, 3,829,305.
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,829,424.
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,829,575.
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,829,586.

Swiss Aluminium Ltd.: *See—*
Chaudhuri, Kiranendu; and Bachofner, Peter, 3,829,365.
Kugler, Tibor; and Rieger, Hans Wolfhart, 3,829,374.

Sylvester, Alfred Glenn 5Combination jack, anchor and hold-down apparatus: *See—*
Koon, Billy W.; and Sylvester, Alfred Glenn 5Combination jack, anchor and hold-down apparatus, 3,828,491.

Symons Corporation: *See—*
Spellman, Francis T., 3,828,949.

Sysun, Viktor Viktorovich; Basov, Jury Georgievich; and Roldugin, Vladimir Ivanovich. Gas-dynamic discharge light. 3,829,732, Cl. 313-198.000.

Szakacs, Janos B.: *See—*
Hill, Robert; Bliss, George D.; and Szakacs, Janos B., 3,828,732.

Szczepanski, Harry. Automatic spray-painting machine. 3,828,721, Cl. 118-7.000.

Tackett, Marcus, Jr., to Tangen Drives, Inc. Shallow cup feeder and orienter. 3,828,921, Cl. 198-287.000.

Tagnon, Luc Andre, to Essilor International. Apparatus for fixing mounting means on spectacle lenses. 3,828,842, Cl. 164-334.000.

Takahashi, Yasuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Wide angle lens system. 3,829,198, Cl. 350-220.000.

Takashi, Kiyoshi: *See—*
Ogoro, Masanobu; and Takashi, Kiyoshi, 3,829,870.

Takasu, Hiromi: *See—*
Yamada, Norio; Ikejima, Yoritaka; Takasu, Hiromi; Kubo, Masao; and Tanaka, Yoshimasa, 3,828,430.

Takayasu, Kiyosumi. Heat exchanger. 3,828,851, Cl. 165-165.000.

Takeda Chemical Industries, Ltd.: *See—*
Hoshino, Masao; and Oka, Yuushi, 3,829,361.
Matsui, Yutaka; Kazama, Seiji; and Nakabayashi, Masamitsu, 3,829,533.

Takeda Riken Industry Company Limited: *See—*
Ashida, Hitoshi, 3,829,769.

Talbat, Richard C.; Rose, Edward; and Roth, Robert A., to Peters Machinery Company. Slug conveyor for conveying slugs of articles and releasing the slugs of articles for packaging. 3,828,918, Cl. 198-155.000.

Talbo, William J., Jr.: *See—*
Gerwick, Ben C., Jr.; Talbo, William J., Jr.; Hughes, Keith E.; and Brown, Arnold L., 3,828,708.

Tallinsky Politeknichesky Institut: *See—*
Aarna, Agu Yanovich; Kiisler, Karl Ritsovich; Gerkhardovich, Peep; and Tanner, Juri Albert-Mikhaelovich, 3,829,528.

Tanaka, Kunihiro, to Nippon Electric Company Limited. Encased micro-circuit and the process for manufacturing the same. 3,829,604, Cl. 174-525.000.

Tanaka, Shogo: *See—*
Yamashita, Keitarou; and Tanaka, Shogo, 3,828,730.

Tanaka, Takashi; and Nomura, Yasuo, to Matsushita Electric Industrial Co., Ltd. Multi-channel magnetic head with offset gap lines. 3,829,895, Cl. 360-121.000.

Tanaka, Yoshimasa: *See—*
Yamada, Norio; Ikejima, Yoritaka; Takasu, Hiromi; Kubo, Masao; and Tanaka, Yoshimasa, 3,828,430.

Tanaszek, Frank J.: *See—*
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Tangen Drives, Inc.: *See—*
Tackett, Marcus, Jr., 3,828,921.

Tanner, Juri Albert-Mikhaelovich: *See—*
Aarna, Agu Yanovich; Kiisler, Karl Ritsovich; Gerkhardovich, Peep; and Tanner, Juri Albert-Mikhaelovich, 3,829,528.

Tarter, James H., to Continental Oil Company. Hydraulic control apparatus for a mobile slurry handling system. 3,828,875, Cl. 180-14.00a.

Taylor, Don A. Apparatus for molding strip material. 3,829,271, Cl. 425-385.000.

Taylor, George R., to United States of America, Army. Differential baroswitch. 3,829,640, Cl. 200-83.00n.

Taylor, Rolla D.: *See—*
Fornoff, Louis L.; Collins, John J.; and Taylor, Rolla D., 3,829,560.

Taylor, William D.: *See—*
Ashby, Eugene C.; Taylor, William D.; and Winkler, Donald A., 3,829,390.

Tec Group, Inc., The: *See—*
Hickey, William E., Jr., 3,828,929.

Tecotzky, Melvin: *See—*
Buchanan, Robert A.; Tecotzky, Melvin; and Wickersheim, Kenneth A., 3,829,700.

TED Bildplatten Aktiengesellschaft: *See—*
Dickopp, Gerhard, 3,829,605.

Teich, Rudor M. Automobile theft alarm with ignition controlled automatic arming means. 3,829,829, Cl. 340-64.000.

Teijin Limited: *See—*
Hara, Shigeyoshi; Yamada, Takeyoshi; and Yoshida, Tsunemasa, 3,829,399.

Teleflex Incorporated: *See—*
Wiegand, Hans, 3,828,624.

Telesco Brophey Limited: *See—*
Thur, Klaus, 3,828,805.

Teller, Sonia R.: *See—*
Berger, Joel G.; and Teller, Sonia R., 3,829,431.

Tempco Industrial Heater Corporation: *See—*
Hinz, Edward W., 3,829,657.

Templeton, Charles C.; Street, Evan H., Jr.; and Richardson, Edwin A., to Shell Oil Company. Dissolving siliceous materials with self-acidifying liquid. 3,828,854, Cl. 166-307.000.

Temrin, Ingemar. Electric heating unit. 3,829,656, Cl. 219-367.000.

Tenenbaum, Paul: *See—*
Yurgevich, Howard, 3,828,476.

Tenner, Oskar, to Gravicast Patentverwertungsgesellschaft m.b.H. Process for the emergency interruption of the flow of melt in a gravity casting plant. 3,828,974, Cl. 222-1.000.

Terry Controls Corporation: *See—*
Langdon, David H.; Prentice, James C.; and Van Olinda, David L., 3,829,842.

Terry, Stanley M., to Maremont Corporation. Arc welder and combined auziliary power unit and method of arc welding. 3,829,652, Cl. 219-133.000.

Tesoro, Giuliana C., to Burlington Industries, Inc. Process for decreasing the flammability of textiles and product produced thereby. 3,829,289, Cl. 8-115.700.

Tessendorf, Gunter: *See—*
Geiser, Hans; and Tessendorf, Gunter, 3,829,822.

Tessmann, Alfred H. Methods and apparatus for producing a finished joint between ends of wires, rods and the like. 3,828,601, Cl. 72-334.000.

Testaguzza, Gino S.; and Perini, Paul A. Prefabricated building construction. 3,828,496, Cl. 52-91.000.
Testerman, Joseph E.; and Robertson, Louis A., to United States of America, Army. Safety wire interrupter assembly. 3,828,645, Cl. 89-1.50d.
Texaco Exploration Canada Ltd.: *See—*
McKay, Alexander S., 3,829,685.
Texaco Inc.: *See—*
Cole, Edward L.; and McCoy, Frederic C., 3,829,525.
Eisner, Elmer, 3,828,891.
Hopkins, Walker L.; Chvatal, Leland A.; and White, William D., 3,829,376.
Schultz, Ward E.; Smith, Harry D., Jr.; and Arnold, Dan M., 3,829,686.
Senn, Charles A., III; and Parker, Levi C., 3,829,524.
Stranahan, John J.; Hollier, John C. L.; and Deloney, Hugh C., 3,829,275.
Texas Instruments Incorporated: *See—*
Andrychuk, Dmetro, 3,829,692.
Charest, Kenneth; Hanley, Robert F.; and Ornstein, Jacob L., 3,829,296.
Ensminger, Clifford H.; and Ruggiero, Edward M., 3,829,653.
Manus, Donald J., 3,828,425.
Martin, Robert C., 3,828,548.
Textron Inc.: *See—*
Edenborough, Harry K.; Wernicke, Kenneth G.; and Carter, George D., 3,829,240.
Lindblom, Frank W., 3,829,200.
Uhrhane, Philip F.; and Day, Donald L., 3,828,494.
Thal, Heinz: *See—*
Eimer, Klaus; and Thal, Heinz, 3,828,930.
Thaler, Warren A.: *See—*
Mueller, Wolfgang H.; Thaler, Warren A.; and Oswald, Alexis A., 3,829,535.
The Kendall Company, mesne: *See—*
Zoephel, Richard L., 3,828,784.
Thelen Alfred, to Balzers Patent- und Beteiligungs-Aktiengesellschaft. Antireflective multilayer coating on a highly refractive substrate. 3,829,197, Cl. 350-164.000.
Theratron Corporation: *See—*
Buch, Roman; Kocsis, Louis L.; and Sadove, Max S., 3,828,773.
Theurer, Josef: *See—*
Plasser, Franz; Theurer, Josef; and Schubert, Egon, 3,828,440.
Thibault, Jacques P. Electrical heating envelopes. 3,829,655, Cl. 219-535.000.
Thiebault, Robert, to Prefecture de Police. Wheel clamp. 3,828,590, Cl. 70-19.000.
Thiele, Geraldine H. Method of fusing bones. 3,828,772, Cl. 128-92.00g.
Thiele, Kurt; and Posselt, Klaus, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. N-Hydroxyarylaliphatic-aminopropiophenones and the salts thereof. 3,829,469, Cl. 260-510.50c.
Thiene, Hans: *See—*
Zahn, Wolfgang; Weinert, Volker; Thiene, Hans; and Hujer, Friedrich, 3,829,214.
Thoenen, Earl R.: *See—*
Powers, Sheldon D.; and Thoenen, Earl R., 3,829,879.
Thomas, Ian A., to Flextac Nodwell Ltd. Gang plate fastening assembly and endless track formed therewith. 3,829,174, Cl. 305-35.0eb.
Thomas, Klaus: *See—*
Schroder, Ludwig; Thomas, Klaus; and Goeth, Hanns, 3,829,426.
Thomas, Moses L.: *See—*
Doss, Richard C.; and Thomas, Moses L., 3,829,526.
Thomas, Paul W.: *See—*
Downey, Rogers B.; and Thomas, Paul W., 3,829,205.
Thompson, Norman S.; Nicholls, Gordon A.; and Han, Shu-Tang, to Institute of Paper Chemistry, The. Oxidative manufacture of pulp with chlorine dioxide. 3,829,357, Cl. 162-23.000.
Thompson, Robert L.: *See—*
Qualley, Ray W.; and Thompson, Robert L., 3,829,279.
Thomson-CSF: *See—*
Assouline, Georges; Hareng, Michel; and Leiba, Eugene, 3,829,684.
Ernvein, Joel, 3,829,827.
Thorborg, Kjeld, to Allmanna Svenska Elektriska Aktiebolaget. Means for generating reactive power. 3,829,759, Cl. 323-119.000.
Thorneburg Hosiery Mills, Inc.: *See—*
Thorneburg, James L., 3,828,585.
Thorneburg, James L., to Thorneburg Hosiery Mills, Inc. Denim sock and method of knitting same. 3,828,585, Cl. 66-136.000.
Thur, Klaus, to Telesco Brophey Limited. Self-closing umbrella frame. 3,828,805, Cl. 135-22.000.
Thurber, Kenneth James: *See—*
Berg, Robert Orval; and Thurber, Kenneth James, 3,829,846.
Thurmond, Carl Dryer: *See—*
Logan, Ralph Andre; and Thurmond, Carl Dryer, 3,829,556.
T.I. (Group Services) Limited: *See—*
Parkinson, Geoffrey John, 3,829,220.
Tidwell, James T.: *See—*
Bradburn, Eugene H.; and Tidwell, James T., 3,829,313.
T'Jampens, Germain Remi; and Prakken, Gerrit, to U.S. Philips Corporation. Tungsten-bromine cycle lamp. 3,829,731, Cl. 313-174.000.
Tkachev, Leonid Grigorievich: *See—*
Olshansky, Nikolai Alexandrovich; Smelyansky, Matvei Yakovlevich; Lopatko, Anatoly Petrovich; Tkachev, Leonid Grigorievich; Kozhaev, Arkady Filippovich; Sapozhnikov, Alexandr Ivanovich; and Chernakov, Gennady Anatolievich, 3,829,651.
Tohi, Atsutomo; Sakai, Kunio; Fukai, Masakazu; and Tsujimoto, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Method for diffusing an impurity substance into silicon carbide. 3,829,333, Cl. 148-1.500.
Tokuyama Soda Kabushiki Kaisha: *See—*
Mizutani, Yukio; Izumi, Yusuki; and Watanabe, Yoshiaki, 3,829,495.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Igarashi, Ryuji, 3,829,649.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Goto, Kenya, 3,829,694.
Hirasawa, Masataka; and Kawagai, Kenji, 3,829,710.
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 3,829,555.
Tolstoguzov, Vladimir Borisovich; Izjumov, Dmitry Borisovich; Grinberg, Valery Yakovlevich; Marusova, Alla Nikolaevna; and Chekhovskay, Violettateofilovna. Method of making protein-containing foodstuffs resembling minced-meat. 3,829,587, Cl. 426-350.000.
Tomy Kogyo Co., Ltd.: *See—*
Yamamoto, Hideyuki, 3,828,970.
Tonooka, Katsuo: *See—*
Iizuka, Toru; Tonooka, Katsuo; Saitoh, Torahiko; and Yasuda, Isao, 3,829,332.
Tools and Production, Inc.: *See—*
Grano, James V., 3,828,632.
Topley, Bryan: *See—*
Kent, Alan; and Topley, Bryan, 3,829,479.
Topmatic Corporation: *See—*
Johnson, Allan S., 3,829,230.
Toppan Printing Co. Ltd.: *See—*
Anzai, Masao; and Miyatake, Masayuki, 3,829,286.
Toray Industries, Inc.: *See—*
Kato, Tetsuya; and Ohira, Tutomu, 3,829,400.
Torin Corporation: *See—*
Samson, Wilfred Joseph, Jr., 3,829,250.
Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich; Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich. Installation for pneumatic conveyance of containerized loads through a tube. 3,829,042, Cl. 243-3.000.
Townsend Engineering Company: *See—*
Townsend, Ray T., 3,828,740.
Townsend, Ray T., to Townsend Engineering Company. Rotary internal combustion engine and method of cooling the same. 3,828,740, Cl. 123-44.00e.
Toyo Ink Manufacturing Co., Ltd.: *See—*
Anzai, Masao; and Miyatake, Masayuki, 3,829,286.
Toyo Purasu Sukuryu Kabushiki Kaisha (Toyo Plus Screw Co. Ltd.): *See—*
Nakamura, Yoshio, 3,828,382.
Toyoda Koki Kabushiki Kaisha: *See—*
Ishikawa, Mineo; and Moriya, Kazuo, 3,828,439.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Iida, Teiji; and Yoshimura, Noboru, 3,829,156.
Kitano, Masao; and Kondo, Yasuo, 3,828,844.
Tranchero, Jacques. Three-stage self-propelled crane. 3,828,939, Cl. 212-8.000.
Treffner, Walter S.: *See—*
Farrington, Grant M., Jr.; and Treffner, Walter S., 3,829,541.
Trescott, Edward B.; and Richards, James C. Method of oxidation of alkyldihalogenphosphines to their oxides. 3,829,480, Cl. 260-543.00p.
Tri-Kem Corporation: *See—*
Rice, Leonard M., 3,829,569.
Tri-Way Industries, Inc.: *See—*
Del Missier, Richard J., 3,828,374.
Triffit, James Christopher Herbert: *See—*
Sharpe, Raymond; and Triffit, James Christopher Herbert, 3,828,618.
Triplett Corporation: *See—*
Cerveny, Walter J., 3,829,774.
Tripsas, Trifon P., to GTE Automatic Electric Laboratories, Incorporated. Trunk circuit number parity checking. 3,829,628, Cl. 179-175.20r.
Trubin, Anatoly Petrovich: *See—*
Vragov, Jury Dmitrievich; Danyaev, Vladimir Egorovich; Trubin, Anatoly Petrovich; and Sinichkin, Sergei Gavrilovich, 3,828,647.
Trumpf & Co., Firma: *See—*
Leibinger, Berthold, 3,828,432.
Truskanov, David Matveevich; Brunin, Kirill Rudolfovich; and Ratner, Lev Semenovich. Transmitting stacked aerial. 3,829,864, Cl. 343-833.000.
Tsang, Floris Y., to Dow Chemical Company, The. Sodium borate glass compositions and batteries containing same. 3,829,331, Cl. 136-146.000.
Tsantker, Karl Lazarevich: *See—*

Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.

Tsimbler, Jury Abramovich: *See—*
Torochkov, Ivan Mikhailovich; Kobulia, Georgy Samsonovich; Alexandrov, Adolf Martitsovich; Suladze, Ippolit Davidovich; Matskin, Leonid Arkadievich; Gambashidze, Zurab Dmitrievich; Balayan, Ruben Dzhangirovich; Tsimbler, Jury Abramovich; Kakhniashvili, Avtndil Semenovich; and Aglitsky, Vladimir Efimovich, 3,829,042.

Tsuchiya, Hitoshi: *See—*
Yao, Ching-Chun; and Tsuchiya, Hitoshi, 3,829,263.

Tsuchiya, Toshio; and Abe, Atsushi, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle for use on snow, ice or the like. 3,828,872, Cl. 180-5.00r.

Tsujibayashi, Koichi, to Nippon Felt Co., Ltd. Paper making machine having once-twisted endless felts. 3,829,359, Cl. 162-274.000.

Tsujimoto, Yoshinobu: *See—*
Tohi, Atsutomo; Sakai, Kunio; Fukai, Masakazu; and Tsujimoto, Yoshinobu, 3,829,333.

Tsukakoshi, Osamu; and Kiriya, Masashi, to Ulvac Corporation. System for measuring and recording gas chromatograms and mass spectra by a direct combination of a gas chromatograph and a quadrupole mass spectrometer. 3,829,689, Cl. 250-290.000.

Tsukihoshi Gomu Kabushiki Kaisha (The Moon-Star Rubber Ltd.): *See—*
Ainoura, Masato, 3,829,298.

Tsunoda, Yoshito; and Oshida, Yoshitada, to Hitachi, Ltd. Random phase plate for fourier transform holography. 3,829,193, Cl. 350-3.500.

Tsuruishi, Yuki, to Kabushiki Kaisha Suwa Seikosha. Driving circuit for electronic timepiece. 3,828,545, Cl. 58-28.00a.

Tucker, William F., to Monsanto Company. Doping control for semiconductor materials. 3,829,382, Cl. 252-62.30r.

Tull, Alonzo E.; Benson, Ernest J.; and Weiveris, William V., to Bentul Equipment Corporation. Article unscrambler. 3,828,914, Cl. 198-30.000.

Turchaninov, Vasily Vasilievich; Shelkovnikov, Jury Petrovich; Machkov, Gennady Maximovich; and Korolev, Oleg Alexandrovich. Pig piling device. 3,828,944, Cl. 214-6.500.

Tyco Laboratories, Inc., mesne: *See—*
Guetersloh, John W., 3,829,850.

Tyrseck, Walter J.: *See—*
Hackenbert, Robert A.; Tyrseck, Walter J.; and Berry, Chapman, 3,829,005.

Uchida, Isamu, to Minolta Camera Kabushiki Kaisha. Detachable viewfinder arrangement for use in a photographic camera. 3,828,644, Cl. 88-54.000.

Uchida, Kenji: *See—*
Gomes, John M.; and Uchida, Kenji, 3,829,309.

Uchida, Kosaku, to Matsushita Electric Industrial Company, Limited. System for coupling magnetic recording and reproducing machine with television receiver. 3,829,891, Cl. 360-33.000.

Uchino, Kunio. Bicycle drives. 3,828,621, Cl. 74-243.0pc.

Ueda, Hiroshi; and Nishitani, Kiyoshi, to Minolta Camera Kabushiki Kaisha. Means for operating mirror and diaphragm preset device in a single lens reflex camera. 3,829,872, Cl. 354-156.000.

Ueda, Kazuo, to Shikoku Kakooki Co., Ltd. Bottling system. 3,828,522, Cl. 53-167.000.

Uhrhane, Philip F.; and Day, Donald L., to Textron Inc. Roof jack. 3,828,494, Cl. 52-15.000.

Uhtenwoldt, Herbert Rudolf, to Cincinnati Milacron-Heald Corporation. Cam controlled machine for grinding a non-circular surface. 3,828,481, Cl. 51-101.00r.

Ulrich, Henri: *See—*
Richter, Reinhard H.; and Ulrich, Henri, 3,829,444.

Ultrasonic Systems, Inc.: *See—*
Kuris, Arthur; Balamuth, Lewis; and Karatjas, Manuel, 3,828,770.

Ulvac Corporation: *See—*
Tsukakoshi, Osamu; and Kiriya, Masashi, 3,829,689.

Umminger, Frederick W., Jr. Board game apparatus. 3,829,098, Cl. 273-131.0ab.

Underwood, Jereld L.; Edmoundson, Floyd D.; and Dolezal, Milton M., to Houston Chronicle Publishing Company. Printing press ink suppression apparatus. 3,828,674, Cl. 101-349.000.

Union Carbide Corporation: *See—*
Byrd, Priscilla D.; and Fritz, Henry E., 3,829,415.
Fornoff, Louis L.; Collins, John J.; and Taylor, Rolla D., 3,829,560.
Reash, Clair W.; and Pietrasz, Vincent, 3,829,730.

Union Oil Company of California: *See—*
Hashimato, Saburo, 3,829,377.

Union Special Maschinenfabrik: *See—*
Von Hagen, Wolf-Rudiger; and Gauch, Hermann, 3,828,704.

Uniroyal, Inc.: *See—*
Witt, Jerry L.; and Layson, Allen, 3,828,827.

United Aircraft Corporation: *See—*
Amoroso, Salvatore, Jr., 3,829,778.
Rybicki, Robert C.; and Keller, Carl H., Jr., 3,829,239.

United Industrial Syndicate, Inc.: *See—*
Snow, Gerald A., 3,828,997.

United Kingdom Atomic Energy Authority: *See—*
Bowen, Dennis Herbert, 3,828,699.

United Kingdom of Great Britain and Northern Ireland, Minister of /// Ireland, Secretary of State for Defense in Her: *See—*
Vinycomb, William Anthony, 3,828,497.

United Kingdom of Great Britain and Northern Ireland, Minister of Supply in Her Britannic Majesty's Government of the: *See—*
Kent, Alan; and Topley, Bryan, 3,829,479.

United States Borax & Chemical Corporation: *See—*
Strong, Philip L.; Hunter, Don L.; and Le Fevre, Cecil W., 3,829,308.

United States of America
Agriculture: *See—*
Berni, Ralph J.; Benerito, Ruth R.; and Soignet, Donald M., 3,829,290.
Guadagni, Dante G.; and Buttery, Ron G., 3,829,582.
Army: *See—*
Brohawn, Charles L., 3,828,675.
Kaszupski, Stanley J., 3,828,677.
Taylor, George R., 3,829,640.
Testerman, Joseph E.; and Robertson, Louis A., 3,828,645.
Zeto, Robert J.; Bosco, Charles D.; and Hryckowian, Eugene, 3,829,303.
Army, mesne: *See—*
Price, Raymond M., 3,829,336.
Atomic Energy Commission: *See—*
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Chen, Yok; and Abraham, Marvin M., 3,829,391.
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Jensen, Reed J.; Rice, Walter W.; and Beattie, Willard H., 3,829,793.
Stein, Lawrence, 3,829,551.
Environmental Protection Agency: *See—*
Rogers, Charles J.; and Coleman, W. Emile, 3,829,363.
Health, Education and Welfare: *See—*
Banks, Michael E.; Lusk, Walter D.; and Ottinger, Robert S., 3,829,558.
Interior: *See—*
Conroy, George J.; and Parkinson, Howard E., 3,829,856.
Gomes, John M.; and Uchida, Kenji, 3,829,309.
National Aeronautics and Space Administration: *See—*
Booth, Franklin W.; and Bruce, Robert A., 3,828,524.
Chestnutt, David, 3,829,237.
Navy: *See—*
Byram, George W.; and Speiser, Jeffrey M., 3,829,798.
Cutler, Thomas P.; and Dollinger, Kenneth, 3,829,860.
Ford, Robert E., 3,829,788.
Joseph, Horace M., 3,829,674.
Laswell, John E.; and Wildridge, John E., 3,829,146.
Lent, William E.; and Flores, Jose A., 3,829,403.
Matsuo, Jon T.; and Neipling, Lawrence E., 3,829,046.
Murphree, Francis J., 3,829,596.
Nicol, James; Shapiro, Sidney; and Roetter, Martyn F., 3,829,768.
Army: *See—*
Wentworth, Stanley E., 3,829,497.

Universal Oil Products Company: *See—*
Schmerling, Louis, 3,829,450.

Universite de Sherbrooke: *See—*
Deslongchamps, Pierre, 3,829,413.

Uno, Naoyuki; and Urano, Fumio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Film count indicating means for cameras that can perform multiple overlapping exposure. 3,829,876, Cl. 354-209.000.

Upjohn Company, The: *See—*
Kornis, Gabriel; and Nidy, Eldon G., 3,829,463.
Kornis, Gabriel; and Nidy, Eldon G., 3,829,464.
Richter, Reinhard H.; and Ulrich, Henri, 3,829,444.
Stehle, Randall G.; and Oesterling, Thomas O., 3,828,579.
Stehle, Randall G.; and Oesterling, Thomas O., 3,829,579.

Urano, Fumio: *See—*
Uno, Naoyuki; and Urano, Fumio, 3,829,876.

Urquhart-Pullen, David Ian: *See—*
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U.S. Philips Corporation: *See—*
Bergkvist, Bengt, 3,829,858.
Boekkooi, Anton, 3,828,407.
De Bonth, Petrus Cornelis Wilhelmus Maria; Osing, Halbe; Verburg, Cornelis Andries; and Muijderman, Everhardus Albertus, 3,829,270.
Eshraghian, Kamran, 3,829,784.
Hart, Cornelis Maria, 3,829,718.
Jager, Lothar, 3,829,898.
Lathouwers, Franciscus Johannes Maria; and De Groot, Jacob, 3,829,806.
Lorteije, Jean Hubertus Josef; Schmidt, Ernst Machiel; and Van der Put, Henricus Cornelis Adrianus, 3,829,646.
Moeys, Gosuines Phillippus Guilielmus; and Wittkamper, Johannes Martinus, 3,828,831.
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Siemensma, Sidonius Volkert, 3,828,559.
T'Jampens, Germain Remi; and Prakken, Gerrit, 3,829,731.
Zonneveld, Frans Wessel; and Westhof, Johannes, 3,829,844.

US Supply Company: *See—*
Hobbs, L. T., 3,829,152.

Usi, Genichi; and Komine, Isamu, to Nippon Kokan Kabushiki Kaisha. Automatic control system for draw-forming with vibratory energy. 3,828,596, Cl. 72-8.000.

Ustav pro vyzkum motorvych vozidel: *See—*
Hau, Antonin, 3,828,554.

Valbona, Bruno M.; and Voglesonger, Harry M., to Dynamics Corporation of Amercia. Room odor control. 3,829,071, Cl. 261-89.000.

Valenta, Antonin. Shoe liners. 3,828,792, Cl. 128-619.000.

Valleylab Inc.: *See—*
Morrison, Charles F., Jr., 3,828,780.

Van Amsterdam, John C.: *See—*
Phelon, Russell D.; and Van Amsterdam, John C., 3,828,426.

van der Lely, Cornelis; and Nieuwenhoven, Hendricus Jacobus Cornelis. Machines for displacing building sections. 3,828,954, Cl. 214-392.000.

Van der Put, Henricus Cornelis Adrianus: *See—*
Lorteije, Jean Hubertus Josef; Schmidt, Ernst Machiel; and Van der Put, Henricus Cornelis Adrianus, 3,829,646.

van der Sterren, Martin L.: *See—*
Van Meijel, Henricus J. M.; and van der Sterren, Martin L., 3,829,208.

Van Der Veen, Romke: *See—*
De Koning, Jan; Van Der Veen, Romke; and Wolters, Tjako Aaldrik, 3,828,451.

Van Dijk, Edsger Wybe. Radiator for central heating. 3,828,846, Cl. 165-49.000.

Van Dyk Research Corporation: *See—*
Slack, William Frederick, 3,828,637.

Van Etten, Bernardus Adrianus: *See—*
Vermeulen, Johannes Anthonius; and Van Etten, Bernardus Adrianus, 3,828,472.

Van Exel, Gerrit A.; and Akin, Alfred A., Jr, to Bausch & Lomb Incorporated. Binocular. 3,829,194, Cl. 350-76.000.

Van Meijel, Henricus J. M.; and van der Sterren, Martin L., to Oce-van der Grinten N.V. Copying apparatus. 3,829,208, Cl. 355-3.000.

Van Meter, Edmin L., to Gross-Given Mfg. Company. Vending machine circuitry. 3,828,905, Cl. 194-10.000.

Van Olinda, David L.: *See—*
Langdon, David H.; Prentice, James C.; and Van Olinda, David L., 3,829,842.

van Sluys, Robert Nestor Joseph. U.S. Philips Corporation Noise reduction system. 3,829,715, Cl. 307-264.000.

Van, Trong N'Guyen; and Fechant, Louis Joseph. Linear motor with electro-magnetic control. 3,829,746, Cl. 318-135.000.

Van Vlaenderen, Roger, to N.V. Bekaert S.A. Process for manufacturing polyethylene terephthalate plastic coated wire. 3,829,545, Cl. 264-174.000.

Van Wyck, William E.: *See—*
Richter, Calvin; and Van Wyck, William E., 3,828,858.

Van Zuuren, Eduard Willem: *See—*
Grenendaal, Gradus Cornelis; Cool Hans; DeVos, Jacob; and Van Zuuren, Eduard Willem, 3,829,783.

Vanderklaauw, Peter M., to Research Corporation. Method of erecting a multi-story building and apparatus therefor. 3,828,513, Cl. 52-745.000.

Varian Associates: *See—*
Briggs, Walton E.; and Maliakal, Joseph C., 3,828,527.

Varispace Industries, Inc.: *See—*
Ryswick, Edward L., 3,829,147.

Vasilev, Rosen Petrov: *See—*
Julev, Stoyan Iliev; Milkov, Mihail Yordanov; Dachev, Lyubomir Petrov; Vasilev, Rosen Petrov; Kostov, Vasil Alexandrov; and Aroyo, Jacky Sivcho, 3,829,344.

Vasiliev, Nikolai Grigorievich: *See—*
Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.

Vass, Alexander A. Adjustable rectal applicator with draining sleeve. 3,828,774, Cl. 128-241.000.

VAT Aktiengesellschaft fur Vakuum- Apparate-Technik: *See—*
Fend, Heinrich, 3,829,062.

VCA Corporation: *See—*
Steigerwald, Carl J., 3,828,982.

Vdovenko, Nadezhda Vasilievna: *See—*
Ovcharenko, Fedor Danilovich; Chugai, Alexei Dmitrievich; Tsantker, Karl Lazarevich; Logvinenko, Dmitry Danilovich; Shelyakov, Oleg Parfirovich; Chechik, Ljudmila Efimovna; Belonozhko, Alla Mikhailovna; Morozko, Ekaterina Alexandrovna; Kuzmina, Ljudmila Niolaevna; Vdovenko, Nadezhda Vasilievna; Vasiliev, Nikolai Grigorievich; and Soloshenko, Nina Ivanovna, 3,829,028.

VEB Bergmann-Borsig/Goerlitzer Maschinenbau: *See—*
Neumann, Klaus; and Fritz, Wolfgang, 3,828,814.

Velek, Robert J.: *See—*
Centner, Ronald M.; and Velek, Robert J., 3,829,750.

Vendo Company, The: *See—*
Offutt, Elmer Bradley; and Babich, Edward, 3,828,971.

Verber, Carl M.: *See—*
Lewis, Jordan D.; Verber, Carl M.; and McGhee, Robert B., 3,829,838.

Verburg, Cornelis Andries: *See—*
De Bonth, Petrus Cornelis Wilhelmus Maria; Osing, Halbe; Verburg, Cornelis Andries; and Muijderman, Everhardus Albertus, 3,829,270.

Vergara, Adolfo: *See—*
Vergara, Jose D.; Vergara, Adolfo; and Zepeda, Juan L., 3,829,177.

Vergara, Jose D.; Vergara, Adolfo; and Zepeda, Juan L. Security device for braking systems. 3,829,177, Cl. 303-84.00r.

Verkuil, Steven M. Ice auger with slip clutch in drive. 3,828,861, Cl. 173-26.000.

Vermeulen, Johannes Anthonius: *See—*
Vermeulen, Johannes Anthonius; and Van Etten, Bernardus Adrianus, 3,828,472.

Vermeulen, Johannes Anthonius; and Van Etten, Bernardus Adrianus, to Vermeulen, Johannes Anthonius. Flower arranging element. 3,828,472, Cl. 47-41.000.

Veronica, Giacinto; and Fidani, Antonio, to Montecatini Edison S.p.A. Process for preparing calcium nitrate and phosphoric acid solutions free from solid particles in suspension. 3,829,389, Cl. 252-182.000.

Verrien, Jean Prudent Fernand Rene: *See—*
Boy-Marcotte, Jean Louis; Simmonnet, Jacques Louis Paul; Marchal, Philippe Albert Hippolyte; and Verrien, Jean Prudent Fernand Rene, 3,828,574.

Versatec, Inc.: *See—*
Lloyd, William A., 3,829,185.

Vezmar, Alexander G., to Robertson, H. H., Company. Explosion pressures release fastener. 3,828,493, Cl. 52-1.000.

Vickers Limited: *See—*
Payne, Bryan Oliver, 3,829,609.

Vidar Corporation: *See—*
Baichtal, James R., 3,829,893.

Vikhly Georgy Alexandrovich: *See—*
Vitovsky, Nikolai Alexandrovich; Vikhly Georgy Alexandrovich; Mashovets, Tatyana Vadimovna; and Ryvkin, Solomon Meerovich, 3,829,334.

Vincent, John D.: *See—*
Ronzio, Richard A.; Lane, John W.; and Vincent, John D., 3,829,550.

Vink, Johannes Albertus, to CPM/Europe N.V. Apparatus for the production of food pellets from a flour product. 3,828,661, Cl. 99-483.000.

Vinnemann, Antonius: *See—*
Hurzeller, Rene; Vinnemann, Antonius; and Doslik, Peter, 3,828,826.

Vinycomb, William Anthony, to United Kingdom of Great Britain and Northern Ireland, Minister of /// Ireland, Secretary of State for Defense in Her. Ground anchors. 3,828,497, Cl. 52-155.000.

Virginia Chemicals Inc.: *See—*
Ellis, Leonard C.; and Kise, Mearl A., 3,829,358.

Vit, Jaroslav; Casensky, Bohuslav; Mamula, Milan; and Machacek, Jiri, to Ceskoslovenska Akademie Ved. Organically substituted sodium aluminum hydrides and method of making and using the same. 3,829,449, Cl. 260-345.900.

Vitovsky, Nikolai Alexandrovich; Vikhly Georgy Alexandrovich; Mashovets, Tatyana Vadimovna; and Ryvkin, Solomon Meerovich. Method of manufacture of a superconducting material. 3,829,334, Cl. 148-125.000.

Vittoz, Eric Andre, to Centre Electronique Horloger S.A. Frequency dividing logic structure. 3,829,714, Cl. 307-225.00c.

Vock, Manfred: *See—*
Hall, John B.; and Vock, Manfred, 3,829,504.

Vogeli, Ernat, to Polio Establishment. Rail-suspended carriage. 3,829,175, Cl. 308-6.00r.

Voglesonger, Harry M.: *See—*
Valbona, Bruno M.; and Voglesonger, Harry M., 3,829,071.

Volkswagenwerk Aktiengesellschaft: *See—*
Kirschner, Peter; and Rauer, Heinz Gunter, 3,829,119.
Schrader, Herbert, 3,828,820.

Von Hagen, Wolf-Rudiger; and Gauch, Hermann, to Union Special Maschinenfabrik. Combined upper and lower feed for sewing machines. 3,828,704, Cl. 112-212.000.

von Lewis, Alexander, to Bosch, Robert, GmbH. Magnet valve. 3,829,060, Cl. 251-129.000.

Von Loewis of Menar, Alexander; and Riesenberg, Klaus-Otto, to Bosch, Robert, GmbH. Brake control apparatus for a motor car. 3,829,166, Cl. 303-21.0cg.

Vondracek, Charles H.: *See—*
Blewitt, Donald D.; Cameron, Frank L.; and Vondracek, Charles H., 3,829,808.

Vragov, Jury Dmitrievich; Danyaev, Vladimir Egorovich; Trubin, Anatoly Petrovich; and Sinichkin, Sergei Gavrilovich. Method of milling workpieces. 3,828,647, Cl. 90-1.00c.

VRC California Inc.: *See—*
Stebe, Robert F., 3,829,897.

Wagensommer, Jozsef: *See—*
Galgoczy, Gabor; Gyulai, Zoltan; Palagyi, Tivadar; and Wagensommer, Jozsef, 3,828,515.

Waggon Union GmbH: *See—*
Kampmann, Gerhard; and Schneider, Felix, 3,828,693.

Wahlgren, Sven Erik: *See—*
Eriksson, Karl Gunnar; Wahlgren, Sven Erik; and Mangen, Carl Arnold, 3,828,612.

Wainscott, Alan Dale: *See—*
Sanford, Norman Ray; Wainscott, Alan Dale; and Skelton, Billy Keith, 3,828,477.
Walker, Robert G.: *See—*
Hill, Donald E.; Payne, Stanley D.; and Walker, Robert G., 3,828,830.
Wall, John Shiel Clements: *See—*
Cox, Eric Reginald; and Wall, John Shiel Clements, 3,828,915.
Wallace-Murray Corporation: *See—*
Skriletz, Rudolph A.; and Kendall, Virgil D., 3,828,488.
Woollenweber, William E., Jr., 3,829,235.
Wallenfang, Jerome A.; and Witt, Wilmer E., to Koering Company. Cam plate adjustment for recutter screen of forage harvester. 3,829,030, Cl. 241-89.100.
Walles, Wilhelm E., to Dow Chemical Company, The. Heat insulating container having plastic walls retaining vacuum. 3,828,960, Cl. 215-13.00r.
Wallis, Norman William Henry. Fire blanket pack. 3,828,856, Cl. 169-50.000.
Walmet, Gunnar E.: *See—*
Corman, James C.; and Walmet, Gunnar E., 3,828,849.
Walston, Bobby J. Camper converta boat. 3,828,379, Cl. 9-1.00t.
Wanner, Karl: *See—*
Bleicher, Manfred; Falchle, Jorg; Hahner, Reinhard; Hansel, Gernot; Schmid, Wolfgang; and Wanner, Karl, 3,828,863.
Wanner, Rudolf, to Zevatron, GmbH. Automatic soldering machine. 3,828,419, Cl. 29-503.000.
Ward, Rodney R.: *See—*
Evans, John A.; Chavis, Clarence S.; and Ward, Rodney R., 3,829,851.
Ward, Trevor: *See—*
Hemingway, Maurice; and Ward, Trevor, 3,829,284.
Warner, William J.: *See—*
Schuette, Gunter G.; and Warner, William J., 3,828,750.
Warner-Lambert Company: *See—*
Genzer, Jerome D.; and Conrad, George A., 3,829,498.
Warner-Lambert Company, mesne: *See—*
O'Driscoll, Kenneth F.; and Isen, Allan A., 3,829,329.
Warren, Henry Ray, to RCA Corporation. Record web control and drive apparatus. 3,828,996, Cl. 226-168.000.
Watanabe, Koichiro: *See—*
Soejima, Shigeo; Ohmura, Akira; and Watanabe, Koichiro, 3,829,326.
Watanabe, Tatsuo: *See—*
Muratani, Takuro; Saito, Hideki; and Watanabe, Tatsuo, 3,829,777.
Watanabe, Teruji; Fukui, Takasuke; and Suzuki, Shizuo, to Kokusai Denshin Denwa Kabushiki Kaisha. Parametric magnetic sensor. 3,829,894, Cl. 360-111.000.
Watanabe, Yoshiaki: *See—*
Mizutani, Yukio; Izumi, Yusuki; and Watanabe, Yoshiaki, 3,829,495.
Water Bonnet, Inc.: *See—*
Fussell, Edward B., Jr.; and Redmon, Don L., 3,829,153.
Waters, Elmer D., to McDonnell Douglas Corporation. Permafrost structural support with internal heat pipe means. 3,828,845, Cl. 165-45.000.
Watson, Harry A.: *See—*
Davis, Samuel R., Jr.; and Watson, Harry A., 3,829,350.
Waukesha Bearings Corporation: *See—*
Gardner, Willis W., 3,829,180.
Wauquier, Jean-Pierre; and Wiegandt, Herbert Friedrich, to Institut Francais du Petrole, des Carburants et Lubrifiants. Crystallization apparatus. 3,829,293, Cl. 23-273.00r.
Wayland, Paul O., to Westinghouse Electric Corporation. Matrix-type electrodes having braze-penetration barrier. 3,828,428, Cl. 29-630.00c.
Weaver, Max A.: *See—*
Coates, Clarence A., Jr.; and Weaver, Max A., 3,829,411.
Fisher, John G.; Weaver, Max A.; and Coates, Clarence A., 3,829,410.
Webasto-Werk W. Baier KG: *See—*
Lutz, Alfons, 3,829,155.
Webb, James L.: *See—*
Giota, Louis M.; Ellsworth, Charles; and Webb, James L., 3,829,096.
Weber, Albrecht: *See—*
Dziuballe, Gerhard; and Weber, Albrecht, 3,829,075.
Webster, George H.: *See—*
Dembiak, Matthew R.; and Webster, George H., 3,829,340.
Wegst, Walter F.; and Aepli, Otto T., to BASF Wyandotte corporation. Surfactant-form depressant emulsion compositions. 3,829,386, Cl. 252-135.000.
Weidinger, Hans: *See—*
Steenbeck, Ulf; and Weidinger, Hans, 3,828,686.
Weigele, Manfred: *See—*
Leimgruber, Willy; and Weigele, Manfred, 3,829,423.
Weil, Sanford A., to Gas Development Corporation. Adiabatic saturation cooling machine. 3,828,528, Cl. 55-388.000.
Weiler, Ernest D.: *See—*
Bayer, Horst O.; and Weiler, Ernest D., 3,828,580.
Bayer, Horst O.; and Weiler, Ernest D., 3,829,580.
Weill & Reineke GmbH: *See—*
Saucke, Heinz, 3,828,563.
Weinert, Volker: *See—*
Zahn, Wolfgang; Weinert, Volker; Thiene, Hans; and Hujer, Friedrich, 3,829,214.
Weinhart, Martin, to Master Molded Products Corporation. Disposable ointment applicator. 3,828,778, Cl. 128-261.000.
Weir, William David, to Rohm & Haas Company. Tetrahydro-4H-1,3,5-oxadiazin-4-one. 3,829,419, Cl. 260-244.000.
Weis, Roger R., to Caterpillar Tractor Company. Engine control system. 3,828,742, Cl. 123-102.000.
Weis, Siegfried K.: *See—*
Frost, Charles C.; and Weis, Siegfried K., 3,828,619.
Weisgerber, Thomas W., to General Motors Corporation. Automotive air conditioning system. 3,828,569, Cl. 62-227.000.
Weiveris, William V.: *See—*
Tull, Alonzo E.; Benson, Ernest J.; and Weiveris, William V., 3,828,914.
Welch, John A.: *See—*
Britton, James E.; and Welch, John A., 3,829,229.
Well-Saver, Inc.: *See—*
Jones, Len M., 3,828,764.
Wellbaum, William C.: *See—*
Briggs, Eugene C.; and Wellbaum, William C., 3,829,281.
Wells, George William: *See—*
Widdowson, Albert Henry; and Wells, George William, 3,828,582.
Weng, George Ernst, to Hawera Probst Kommanditgesellschaft Hartmetall-Werkzeugfabrik Ravensburg. Tip sharpening machine for drills, especially twist drills. 3,828,480, Cl. 51-85.00r.
Wennerberg, Arnold N., to Standard Oil Company. Process for production of polyarylenes. 3,829,518, Cl. 260-670.000.
Wentworth, Stanley E., to United States of American, Army. Preparation of 1,4-bis (phenylglyoxaloyl) benzene. 3,829,497, Cl. 260-590.000.
Wernberg, Niels-Erik B. Anaesthesia plant for animals to be slaughtered. 3,828,396, Cl. 17-1.00r.
Werner & Pleiderer: *See—*
Kopp, Eugen, 3,828,444.
Wernicke, Kenneth G.: *See—*
Edenborough, Harry K.; Wernicke, Kenneth G.; and Carter, George D., 3,829,240.
Wesley, Robert B. Oxygen-hydrogen generation and sewage treatment method and system. 3,829,368, Cl. 204-149.000.
Westcott & Grabhorn, Ltd.: *See—*
Grabhorn, Robert H.; and Westcott, Norman A., 3,828,967.
Westcott, Norman A.: *See—*
Grabhorn, Robert H.; and Westcott, Norman A., 3,828,967.
Western Electric Company, Incorporated: *See—*
Dembiak, Matthew R.; and Webster, George H. (said Dembiak assor. to), 3,829,340.
Ehlschlager, Arthur John, 3,829,620.
Westhof, Johannes: *See—*
Zonneveld, Frans Wessel; and Westhof, Johannes, 3,829,844.
Westinghouse Electric Corporation: *See—*
Blewitt, Donald D.; Cameron, Frank L.; and Vondracek, Charles H., 3,829,808.
Bozanic, Donald A.; Mergerian, Dickron; Minarik, Ronald W.; and Pincoffs, Peter H., 3,829,760.
Carlson, Norman R.; and Zitelli, William E., 3,829,667.
Cleaveland, Charles M., 3,829,647.
Fieglein, James M.; and Csanady, Michael, Jr., 3,829,232.
Gathright, Jack G.; and Park, Richard E., 3,829,671.
Haley, Paul H.; and Enns, Mark K., 3,829,669.
Krishna, Surinder, 3,829,880.
Nitta, Tohei, 3,829,629.
Petersen, Sigrud R.; and Young, Josiah L., 3,829,725.
Scalzo, Augustine J.; and Hultgren, Kent G., 3,829,233.
Scott, Eugene W., 3,829,636.
Wayland, Paul O., 3,828,428.
Winkler, Charles L.; and Mandel, Alan F., 3,828,892.
Woolfson, Martin G.; and Frank Gilbert H., 3,829,747.
Westlund, Arnold E., Jr.; Palmer, Lewis H., III; Audesse, Emery G.; and Huston, Leroy S., to GTE Sylvania Incorporated. Tungsten-halogen lamp. 3,829,729, Cl. 313-174.000.
Wheeler, Bryce A., to Hughes Aircraft Company. Receive and display optical raster scan generator. 3,829,192, Cl. 350-7.000.
Wheelock, Edward A., to Crane Packing Company. High pressure lip seal. 3,829,106, Cl. 277-205.000.
Whelehan, James J. Jr.; and Kraemer, Erich Henry, to Cutler-Hammer, Inc. Broadband millimeter wave parametric amplifier. 3,829,787, Cl. 330-4.900.
Whirlpool Corporation: *See—*
Baker, Cecil J.; and Beckett, Leo G., 3,829,056.
Robandt, William F., II; and Clearman, Jack F., 3,828,975.
White, Percy La Verne. Animal litter. 3,828,731, Cl. 119-1.000.
White, Stanley A., to Rockwell International Corporation. Data modem with adaptive feedback cancellation of lead-in and trailing transients. 3,829,780, Cl. 325-42.000.
White, William D.: *See—*
Hopkins, Walker L.; Chvatal, Leland A.; and White, William D., 3,829,376.
Whiteside, Ross C., Jr.: *See—*
Bertram, James L.; Whiteside, Ross C., Jr.; and Franke, Preston H., Jr., 3,829,354.
Whiting, Harold F., to Hilsinger Corporation, The. Cushioning mount for a lens in the rim of an ophthalmic mounting. 3,829,201, Cl. 351-154.000.
Wickersheim, Kenneth A.: *See—*

Buchanan, Robert A.; Tecotzky, Melvin; and Wickersheim, Kenneth A., 3,829,700.
Wiczer, Sol B.: *See*—
Alexander, David Ord, 3,828,887.
Widdowson, Albert Henry; and Wells, George William, to Wildt Mellor Bromley Limited. Knitting machine equipped with two part needles. 3,828,582, Cl. 66-13.000.
Wiechmann, Otto: *See*—
Jenne, Oswald; Steinkuhl, Josef; Wiechmann, Otto; and Reimann, Gerhard, 3,829,280.
Wiegand, Hans, to Teleflex Incorporated. Actuator assembly. 3,828,624, Cl. 74-501.00r.
Wiegandt, Herbert Friedrich: *See*—
Wauquier, Jean-Pierre; and Wiegandt, Herbert Friedrich, 3,829,293.
Wieland-Werke A.G.: *See*—
Kern, Horstmar, 3,828,516.
Wiethoff, Roger H., to FMC Corporation. Piston for torque transmitting apparatus of the swash plate type. 3,828,654, Cl. 91-488.000.
Wildridge, John E.: *See*—
Laswell, John E.; and Wildridge, John E., 3,829,146.
Wildt Mellor Bromley Limited: *See*—
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Wiles, David M.: *See*—
Blais, Pierre J.,J.,B.; Carlsson, David J.; and Wiles, David M., 3,829,324.
Wilkie, Wallace J., to Sensorlok Corporation. Power sensing and shut-off apparatus. 3,829,703, Cl. 307-18.000.
Wilkus, Edward V.; and Berger, Abe. Aryl ketone containing organosilicon materials. 3,829,455, Cl. 260-448.20b.
William Prym-Werke KG, Firma: *See*—
Glindmeyer, Friedrich; Limpens, Karl; and Hennenberg, Wilhelm, 3,828,825.
Williams, Albert Lloyd: *See*—
Dickert, Joseph John, Jr.; and Williams, Albert Lloyd, 3,829,534.
Williams, Bobby J. Coaxial engine. 3,828,655, Cl. 92-31.000.
Williams, Donzle W., Jr. Key holder. 3,828,595, Cl. 70-457.000.
Williams, Richard E. Automotive air filter gauge. 3,828,441, Cl. 33-178.00b.
Willieme, Marcia B. Composite cover-support for cassettes and books. 3,829,132, Cl. 281-31.000.
Willis, Arthur E. Decorative wall fixture. 3,828,457, Cl. 40-152.100.
Willis, John Robert; and Urquhart-Pullen, David Ian, to Rank Organisation Limited, The. Planar voice coil loudspeaker. 3,829,623, Cl. 179-115.0pv.
Wilson, Arthur C., to General Electric Company. Oven door construction with front glass panel. 3,828,763, Cl. 126-200.000.
Wind Wonder, Inc.: *See*—
Jones, James D., 3,829,010.
Windsor, Robert K. Eyelash applicator. 3,828,803, Cl. 132-31.00a.
Winfield, John D., to ERCO Industries Limited. Production of chlorine dioxide. 3,829,557, Cl. 423-478.000.
Wingo, Mason C.: *See*—
Mueller, Martin; and Wingo, Mason C., 3,828,660.
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; and Schroeder, Rolf, to AGFA-Gevaert Aktiengesellschaft. Photographic camera for use with roll film. 3,829,875, Cl. 354-206.000.
Winkler, Charles L.; and Mandel, Alan F., to Westinghouse Electric Corporation. Elevator system. 3,828,892, Cl. 187-29.00r.
Winkler, Donald A.: *See*—
Ashby, Eugene C.; Taylor, William D.; and Winkler, Donald A., 3,829,390.
Winkler, Horst Guenther. Mounting device for the manufacture of dental prostheses. 3,828,433, Cl. 32-32.000.
Winner Food Products Limited: *See*—
Hui, In-Wai, 3,829,593.
Wirtgen, Reinhard. Apparatus for milling road surfaces. 3,829,161, Cl. 299-39.000.
Wise, Louis M.; and Bozek, Edmund J. Jr., to Amercian Home Products Corporation. Caustic cleaner composition. 3,829,387, Cl. 252-156.000.
Withrow, David A., to Production Machinery Corporation. Apparatus and method for leveling metal strip. 3,828,599, Cl. 72-163.000.
Witt, Jerry L.; and Layson, Allen, to Uniroyal, Inc. Manufacture of woven wire tire cord fabric. 3,828,827, Cl. 139-99.000.
Witt, Wilmer E.: *See*—
Wallenfang, Jerome A.; and Witt, Wilmer E., 3,829,030.
Witte, Theo. Adjustable pressure control valve. 3,828,822, Cl. 138-45.000.
Wittkamper, Johannes Martinus: *See*—
Moeys, Gosuines Phillippus Guilielmus; and Wittkamper, Johannes Martinus, 3,828,831.
Wolf, Milton; Sellstedt, John H.; and Fenichel, Richard L., to American Home Products Corporation. Bis-(O-N-substituted-carbamylphenyl) disulfide and mercapto reduction product. 3,829,488, Cl. 260-558.00s.
Wolkowicz, Richard I., to Scott Paper Company. Thermoplastic polymeric sheet containing antistat compound. 3,829,408, Cl. 260-88.250.
Wolters, Tjako Aaldrik: *See*—
De Koning, Jan; Van Der Veen, Romke; and Wolters, Tjako Aaldrik, 3,828,451.
Wolthausen, Edward C.: *See*—
Reba, Imants; and Wolthausen, Edward C., 3,829,070.
Woodhead, Daniel, Inc.: *See*—
Eckart, George R., 3,829,819.
Woodruff, Gene N., to Philips Petroleum Company. Stable asphalt-polyolefin emulsions. 3,829,321, Cl. 106-277.000.
Woodward, Bruce C., to Kennametal Inc. Briquetting apparatus and die member arrangement therefor. 3,829,267, Cl. 425-237.000.
Woodward, Richard V.; and McMahon, Richard A., to Factory Mutual Research Corporation, mesne. Fire extinguishing system nozzle. 3,828,855, Cl. 169-40.000.
Woodward, Robert B.: *See*—
Conover, Lloyd H.; and Woodward, Robert B., 3,829,453.
Woolfson, Martin G.; and Frank Gilbert H., to Westinghouse Electric Corporation. Control system for synchronous motor. 3,829,747, Cl. 318-175.000.
Woollenweber, William E., Jr., to Wallace-Murray Corporation. Turbocharger compressor with dual collector chambers. 3,829,235, Cl. 415-143.000.
Wortley, John Philip Atkinson: *See*—
Ives, Andrew George; and Wortley, John Philip Atkinson, 3,829,366.
Woter, Allan Roy, to Boeing Company, The. Method for determining thermal fatigue of electronic components. 3,828,606, Cl. 23-15.00r.
Wright, Andrew Charles Walden: *See*—
Newstead, Charles; and Wright, Andrew Charles Walden, 3,828,898.
Wu, Yao Hua; and Mueller, Arthur Jacob, to Mead Johnson & Company. 2-(2-Indolyl)-indolines. 3,829,414, Cl. 260-239.00b.
Wulf, Karl A., to Alco Standard Corporation. Rotary retort furnace. 3,829,283, Cl. 432-103.000.
Wulff, Harald P., to Shell Oil Company. Heterogeneous catalysts for olefin epoxidation. 3,829,392, Cl. 252-430.000.
Wunderlich, Klaus; and Bien, Hans-Samuel, to Bayer Aktiengesellschaft. Anthraquinone dyestuffs. 3,829,452, Cl. 260-372.000.
Wuopio, Richard A.: *See*—
Adams Robert T.; Heath, William A.; and Wuopio, Richard A., 3,829,510.
Wyant, James C., to Itek Corporation. Shearing interferometer. 3,829,219, Cl. 356-107.000.
Wyeth, John, & Brother Limited: *See*—
Curran, Adrian Charles Ward, 3,829,427.
Wyle Laboratories, mesne: *See*—
Karaganis, James J.; and Payne, Peter R., 3,829,861.
Xerox Corporation: *See*—
Buddendeck, Gerald A.; and Cox, Herman L., 3,829,209.
Ha, In W.; and Fravel, John C., 3,829,745.
Hoyer, August, 3,829,082.
Yang, Frank Y., 3,828,728.
Yamada, Kantaro; and Ishii, Hiromichi, to Mitsubishi Rayon Company, Ltd. Process for oxidation of propylene. 3,829,476, Cl. 260-533.00n.
Yamada, Norio; Ikejima, Yoritaka; Takasu, Hiromi; Kubo, Masao; and Tanaka, Yoshimasa, to Matsushita Electric Works, Ltd. Electric dry shaver with cut hair disposal means. 3,828,430, Cl. 30-41.500.
Yamada, Takeyoshi: *See*—
Hara, Shigeyoshi; Yamada, Takeyoshi; and Yoshida, Tsunemasa, 3,829,399.
Yamaguchi, Namio: *See*—
Kawamata, Yukio; Yamamoto, Keisuke; and Yamaguchi, Namio, 3,829,606.
Yamamoto, Hideyuki, to Tomy Kogyo Co., Ltd. Combination article dispensing-amusement device. 3,828,970, Cl. 221-24.000.
Yamamoto, Hisao: *See*—
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,829,420.
Yamamoto, Katsuro, to Bridgestone Liquefied Gas Company, Ltd. Method of hydraulically testing low temperature liquefied gas tank of a membrane type. 3,828,608, Cl. 73-37.000.
Yamamoto, Keisuke: *See*—
Kawamata, Yukio; Yamamoto, Keisuke; and Yamaguchi, Namio, 3,829,606.
Yamamoto, Michihiro: *See*—
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,829,420.
Yamamoto, Shigeo: *See*—
Araki, Toru; and Yamamoto, Shigeo, 3,829,312.
Yamamoto, Shinji; and Nakata, Kazuo, to Hitachi, Ltd. Pattern recognizing system. 3,829,831, Cl. 340-146.3aq.
Yamamoto, Yukio, to Nissan Motor Company, Limited and Kanto Seiki Company, Limited. Locking device for a motor vehicle steering mechanism. 3,828,594, Cl. 70-252.000.
Yamanaka, Akira: *See*—
Imura, Toshinori; and Yamanaka, Akira, 3,829,873.
Yamanaka, Takesi: *See*—
Naitou, Nobuyosi; Baba, Keizi; Huziwara, Sigehisa; and Yamanaka, Takesi, 3,828,904.
Yamashita, Keitarou; and Tanaka, Shogo, to Hitachi Metals, Ltd. Electrstatic record developing apparatus. 3,828,730, Cl. 118-637.000.
Yang, Frank Y., to Xerox Corporation. Xerographic development system. 3,828,728, Cl. 118-637.000.
Yao, Ching-Chun; and Tsuchiya, Hitoshi, to Rion Kabushiki Kaisha. Apparatus for reduced pressure casting of synthetic resins. 3,829,263, Cl. 425-145.000.
Yarbrough, James G., to Jet Forwarding, Inc. Container having resilient support means. 3,828,965, Cl. 220-1.500.
Yardney International Corporation: *See*—

Blake, Ivan C.; and Cercone, Ronald, 3,829,539.
Yasuda, Isao: *See—*
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Yasumatsu, Kozi: *See—*
Ogawa, Yoshikatsu; Katada, Keiji; Nakano, Mitsuhiro; and Yasumatsu, Kozi, 3,829,398.
Yates, Robert E.: *See—*
Davis, Wilbur M.; and Yates, Robert E., 3,828,667.
Yauchler, Richard A. Liquid contact inertia switch with reset plunger and electrolyte. 3,829,639, Cl. 200-61.470.
Yeakey, Ernest Leon; and Moss, Philip Hotchkiss, to Jefferson Chemical Company, Inc. Stabilized 2-(2-aminoether) ethanol and ether. 3,829,494, Cl. 260-584.00c.
Yokohama Rubber Co., Ltd., The: *See—*
Matsushita, Kazuo, 3,828,715.
Yoshida Engineering Co., Ltd.: *See—*
Yoshida, Tokuji; and Amakasu, Mitsuzi, 3,828,538.
Yoshida, Tokuji; and Amakasu, Mitsuzi, to Yoshida Engineering Co., Ltd. High-speed double twist twisting apparatus mainly adapted to twist steel wires. 3,828,538, Cl. 57-58.540.
Yoshida, Tsunemasa: *See—*
Hara, Shigeyoshi; Yamada, Takeyoshi; and Yoshida, Tsunemasa, 3,829,399.
Yoshimura, Noboru: *See—*
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Young, David W. Ridge scan antenna. 3,829,862, Cl. 343-767.000.
Young, John P. Boat bow step. 3,828,707, Cl. 114-.50r.
Young, Josiah L.: *See—*
Petersen, Sigrud R.; and Young, Josiah L., 3,829,725.
Young, LaVern L. Young calf dehorner. 3,828,789, Cl. 128-303.100.
Young, Michael Iain: *See—*
Mason, Brian Edward; and Young, Michael Iain, 3,828,400.
Young, Roland O. Lifting device. 3,828,942, Cl. 214-1.0sw.
Yuen, Shokichi, to Hayashibara, Ken. Mixture of maltobionic acid and monosodium glutamate as a food seasoning. 3,829,583, Cl. 426-175.000.
Yurgevich, Howard, to Tenenbaum, Paul and Strick Corporation. Hinge assembly. 3,828,476, Cl. 49-501.000.
Zagarella, Adriano: *See—*
Portinari, Giovanni; and Zagarella, Adriano, 3,829,600.
Zahn, Gunter, to Ziller & Co. Method of making a frictional connection between an antifriction bearing and a sealing ring. 3,828,411, Cl. 29-148.40s.
Zahn, Wolfgang; Weinert, Volker; Thiene, Hans; and Hujer, Friedrich, to Agfa-Gevaert' Aktiengesellschaft. Photographic film copying apparatus. 3,829,214, Cl. 355-83.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See—*
Nishizawa, Junichi; and Nonaka, Terumoto, 3,829,885.
Zapart, Bruno J. Collet-truing device. 3,829,108, Cl. 279-1.001.
Zbojovka Vsetin, narodni podnik: *See—*
Cernocky, Jiri; Riha, Miloslav; and Martinec, Josef, 3,828,828.
Zbrojovka, Narodni podnik: *See—*
Prade, Wolfgang, 3,828,912.
Zeeh, Bernd: *See—*
Mueller, Albrecht; Zeeh, Bernd; and Kiefer, Hans, 3,829,482.
Zeiffer, Dieter F., to Gaston County Dyeing Machine Company. Honeycomb roll. 3,828,410, Cl. 29-121.00r.
Zepeda, Juan L.: *See—*
Vergara, Jose D.; Vergara, Adolfo; and Zepeda, Juan L., 3,829,177.
Zeto, Robert J.; Bosco, Charles D.; and Hryckowian, Eugene, to United States of America, Army. Method of improving the dielectric properties of inorganic oxide glass-ceramic materials. 3,829,303, Cl. 65-32.000.
Zevatron, GmbH: *See—*
Wanner, Rudolf, 3,828,419.
Zey, Edward Gustave, to Celanese Corporation. Di-trimethylolpropane. 3,829,507, Cl. 260-615.00r.
Ziller & Co.: *See—*
Zahn, Gunter, 3,828,411.
Zillner, Gunter, to Ford Motor Company. Remote outside rearview mirror. 3,828,623, Cl. 74-491.000.
Zimmermann, Johann Wolfgang, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of compositions comprising polyvinyl alcohol and a finely dispersed solid. 3,829,402, Cl. 260-42.130.
Zinser-Textilmaschinen GmbH: *See—*
Klein, Konrad, 3,828,682.
Zitelli, William E.: *See—*
Carlson, Norman R.; and Zitelli, William E., 3,829,667.
Zoecon Corporation: *See—*
Siddall, John B.; and Henrick, Clive A., 3,829,465.
Zoephel, Richard L., to The Kendall Company, mesne. Conformable baby diaper. 3,828,784, Cl. 128-287.000.
Zonneveld, Frans Wessel; and Westhof, Johannes, to U.S. Philips Corporation. Interrogation apparatus and method including a record carrier for storing images with addresses. 3,829,844, Cl. 340-172.500.
Zuckler, Karl, to Siemens Aktiengesellschaft. Puffer-type electric switch. 3,829,641, Cl. 200-148.00a.
Zuech, Ernest A., to Phillips Petroleum Company. Production of cycloalkylaromatics. 3,829,514, Cl. 260-668.00r.
Zuech, Ernest A.; and Johnson, Marvin M., to Phillips Petroleum Company. Production of cycloalkylaromatics. 3,829,516, Cl. 260-668.00r.
Zuech, Ernest A., to Phillips Petroleum Company. Production of cycloalkylaromatics. 3,829,517, Cl. 260-668.00r.
Zuech, Ernst A.; Johnson, Marvin M; and Nowack, Gerhard P., to Phillips Petroleum Company. Production of cycloalkylaromatics. 3,829,515, Cl. 260-668.00r.
Zuern, Ludwig: *See—*
Keppler, Hans-Georg; Zuern, Ludwig; and Stahnecker, Erhard, 3,829,378.
Zugcic, Joseph Paul, to American Can Company. Identification system. 3,828,668, Cl. 101-40.000.
Zumach, Gerhard; Kuhle, Engelbert; Behrenz, Wolfgang; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Substituted-phenyl-N-alkyl-N-trihalome-thylthio-carbamates. 3,829,437, Cl. 260-327.00m.
Zyma S.A.: *See—*
Schindler, Claude, 3,828,985.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF AUGUST, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Akzona Inc.: *See*—
Rice, Charles M. Re. 28,117.

Anderson, Harold C., and D. F. Graff, to Litton Systems, Inc. Microwave generating apparatus including spurious signal suppression means. Re. 28,114, 8–13–74, Cl. 315–105.

Clark Equipment Co.: *See*—
Howard, Wayne B., and Sisson. Re. 28,113.

Cohen, Harvey K., 50% to Arnold Conn. Filter and water recirculation system. Re. 28,116, 8–13–74, Cl. 210—169.

Conn, Arnold: *See*—
Cohen, Harvey K. Re. 28,116.

Cooper, Herbert W., to Escoa Fintube Corp. Tube fins of outwardly-organized materials. Re. 28,114, 8–13–74, Cl. 165—180.

Eastman Kodak Co.: *See*—
Edens, Charles O., and Van Campen. Re. 28,112.

Edens, Charles O., and J. H. Van Campen, to Eastman Kodak Co. Color photographic elements and process. Re. 28,112, 8–13–74, Cl. 96—22.

Escoa Fintube Corp.: *See*—
Cooper, Herbert W. Re. 28,115

Graff, David F.: *See*—
Anderson, Harold C., and Graff. Re. 28,114.

Hoffmann-La Roche, Inc.: *See*—
Osbond, John M., and Wickens. Re. 28,110.

Howard, Wayne B., and R. L. Sisson, to Clark Equipment Co. Automatic control system for hydrostatic drive. Re. 28,113, 8–13–74, Cl. 60—447.

Laverty, Richard C., to MSL Industries, Inc. Fastener with improved thread construction. Re. 28,111, 8–13–74, Cl. 85—46.

Litton Systems, Inc.: *See*—
Anderson, Harold C., and Graff. Re. 28,114.

MSL Industries, Inc.: *See*—
Laverty, Richard C. Re. 28,111.

Monterose, Henry: *See*—
Provenzano, James, Jr., Saunders, and Monterose. Re. 28,109.

Osbond, John M., and J. C. Wickens, to Hoffmann-La Roche, Inc. Chrysanthemic acid esters. Re. 28,110, 8–13–74, Cl. 260—468.

Provenzano, James, Jr., J. Saunders, and H. Monterose, to United Aircraft Corp. Selective data handling apparatus. Re. 28,109, 8–13–74, Cl. 340—172.5.

Rice, Charles M., to Akzona Inc. Production of torque yarn. Re. 28,117, 8–13–74, Cl. 57—34.

Saunders, John: *See*—
Provenzano, James, Jr., Saunders, and Monterose. Re. 28,109.

Sisson, Ronald L.: *See*—
Howard, Wayne B., and Sisson. Re. 28,113.

United Aircraft Corp.: *See*—
Provenzano, James, Jr., Saunders, and Monterose. Re. 28,109.

Van Campen, John H.: *See*—
Edens, Charles O., and Van Campen. Re. 28,112.

Wickens, James C.: *See*—
Osbond, John M., and Wickens. Re. 28,110.

LIST OF PLANT PATENTEES

Barberet, Alexandre, and H. Blanc, to Laboratoire de Physiologie Vegetale de la Londe Barberet & Blanc. Carnation plant. 3,591, 8–13–74, Cl. 70.

Barberet, Alexandre, and H. Blanc, to Laboratoire de Physiologie Vegetale de la Londe Barberet & Blanc. Carnation plant. 3,592, 8–13–74, Cl. 72.

Blanc, Henri: *See*—
Barberet, Alexandre, and Blanc. 3,591.
Barberet, Alexandre, and Blanc. 3,592.

Danielson, Robert E., to Pan-American Plant Co. Chrysanthemum. 3,587, 8–13–74, Cl. 78.

Laboratoire de Physiologie Vegetale de la Londe Barberet & Blanc: *See*—
Barberet, Alexandre, and Blanc. 3,591.
Barberet, Alexandre, and Blanc. 3,592.

Merrill, Grant. Peach plant. 3,589, 8–13–74, Cl. 43.

Merrill, Grant. Peach plant. 3,590, 8–13–74, Cl. 43.

Pan-American Plant Co.: *See*—
Danielson, Robert E. 3,587.
Shoesmith, Leonard H. 3,588.

Shoesmith, Leonard H., to Pan-American Plant Co. Chrysanthemum plant. 3,588, 8–13–74, Cl. 78.

LIST OF DESIGN PATENTEES

American Optical Corp.: *See*—
Johnsen, David W. 232,380.

Arner, Robert. Sunglasses. 232,379, 8–13–74, Cl. D57—1.

Ballone, Michael P., to The Singer Co. Sewing machine frame. 232,385, 8–13–74, Cl. D70—1.

Barkman, Michael H., to Wabash Tape Corp. Combined tape cassette holder and picture frame. 232,393, 8–13–74, Cl. D87—1.

Becker, Jerome E. Golf putter head. 232,371, 8–13–74, Cl. D34—5.

Bonifant, Bern M., to Flex-a-Lite Corp. Fan. 232,362, 8–13–74, Cl. D23—165.

Bosnyak, Udo. Protective guard for cutlery. 232,342, 8–13–74, Cl. D7—74.

Braverman, Allen S., to Plastic Reel Corp. of America. Storage tray for a cassette and film strips. 232,394, 8–13–74, Cl. D87—1.

Brenneman, J. Edward, and R. S. Waters, to Schick Inc. Shaver. 232,395, 8–13–74, Cl. D95—3.

Broyhill, Roy F. Dump body for small truck. 232,350, 8–13–74, Cl. D12—15.

Cali, Giovanni. Wall plate. 232,346, 8–13–74, Cl. D8—188.

Capoadona, Thomas J. Combined confectionery stick and drink stirrer. 232,330, 8–13–74, Cl. D1—99.

Carrier Corp.: *See*—
Martin, William C., Jr., Hoyle, and Honnold. 232,361.

Chemetron Corp.: *See*—
Sieradzki, Benjamin. 232,353.

Churchill, Steven T., A. Iliakidis, R. B. Pell, and J. M. Shapiro, to Executone, Inc. Intercommunication interconnect telephone. 232,365, 8–13–74, Cl. D26—14.

Cloud, Charles E., to Cloud Machine Corp. Dispensing packet. 232,348, 8–13–74, Cl. D9—192.

Cloud Machine Corp: *See*—
Cloud, Charles E. 232,348.

Cooper, Donald S.: *See*—
Houst, Douglas R., Stackhouse, Wetherby, and Cooper. 232,374.

Coy, Edward H., III., and R. J. Halisey. Receptacle for newspapers and the like. 232,387, 8–13–74, Cl. D74—9.

Current, Wayne A.: *See*—
La Police, George D., and Current. 232,384.

Daenen, Robert, to Dart Industries, Inc. Colander. 232,338, 8–13–74, Cl. D7—47.

Danielsson, Per, and G. Karlsson, to Per Danielson and Gote Karlsson. Medical tweezers. 232,389, 8–13–74, Cl. D83—12.

Dart Industries Inc.: *See*—
Daenen, Robert. 232,338.
Montesi, Edward N. 232,337.
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148R	3,828,753
148	3,828,750
149D	3,828,754
179H	3,828,755
188GC	3,828,756

CLASS 124

41	3,828,757

CLASS 125

13R	3,828,758

CLASS 126

9R	3,828,759
21A	3,828,760
90R	3,828,761
91A	3,828,762
200	3,828,763

CLASS 128

1R	3,828,764
2B	3,828,765
2.05	3,828,767
2.06A	3,828,768
2.1E	3,828,766
2.1W	3,828,766
24A	3,828,769
62A	3,828,770
66	3,828,771
92G	3,828,772
194	3,828,773
218N	3,828,775
241	3,828,774
248	3,828,776
260	3,828,777
261	3,828,778
272	3,828,779
275.1	3,828,780
278	3,828,781
283	3,828,782
284	3,828,783
287	3,828,784
288	3,828,785
290R	3,828,786
303R	3,828,787
303.1	3,828,788
	3,828,789
320	3,828,790
321	3,828,791
619	3,828,792

CLASS 130

27T	3,828,793
	3,828,794

CLASS 131

17	3,828,795
21B	3,828,796
140P	3,828,797
145	3,828,798
195	3,828,799
262	3,828,800
265	3,828,801

CLASS 132

31A	3,828,803
91	3,828,804
900	3,828,802

CLASS 134

1	3,829,328
26	3,829,329

CLASS 135

22	3,828,805

CLASS 136

6LN	3,829,330
146	3,829,331
173	3,829,332

CLASS 137

111	3,828,806
340	3,828,808
344	3,828,809
494	3,828,810
495	3,828,807
556	3,828,811
557	3,828,812
596.13	3,828,813
599	3,828,814
625.26	3,828,815
625.28	3,828,816
625.4	3,828,820
625.47	3,828,817
625.65	3,828,818
630.15	3,828,819
636.4	3,828,821

CLASS 138

45	3,828,822
109	3,828,823

CLASS 139

1E	3,828,824
35	3,828,825
59	3,828,826
99	3,828,827
127P	3,828,828
	3,828,829

CLASS 140

1	3,828,830
71.5	3,828,831
109	3,828,832

CLASS 141

85	3,828,833

CLASS 144

1C	3,828,834
309AC	3,828,835
309DC	3,828,835

CLASS 148

1.5	3,829,333
125	3,829,334
189	3,829,335

CLASS 149

19.3	3,829,336

CLASS 152

158	3,828,836

CLASS 156

63	3,829,337
64	3,829,338
179	3,829,339
201	3,829,340
257	3,829,342
322	3,829,343
380	3,829,341
393	3,829,345
435	3,829,344
527	3,829,346
577	3,829,347

CLASS 159

4R	3,828,837

CLASS 160

176	3,828,838

CLASS 161

16	3,829,348
24	3,829,349
41	3,829,350
50	3,829,351
57	3,829,352
88	3,829,354
92	3,829,353
114	3,829,355
161	3,829,356

CLASS 162

23	3,829,357
71	3,829,358
274	3,829,359
357	3,829,360

CLASS 164

97	3,828,839
195	3,828,840
278	3,828,841
334	3,828,842

CLASS 165

1	3,828,843
8	3,828,844
45	3,828,845
49	3,828,846
76	3,828,847
80	3,828,848
105	3,828,849
109	3,828,850
165	3,828,851
180	Re.28,115

CLASS 166

78	3,828,852
117.5	3,828,853
307	3,828,854

CLASS 169

40	3,828,855
50	3,828,856
53	3,828,857
62	3,828,858

CLASS 172

50	3,828,859
311	3,828,860

CLASS 173

26	3,828,861
43	3,828,862
48	3,828,863
49	3,828,864
101	3,828,866
104	3,828,865

CLASS 174

15R	3,829,598
48	3,829,599
68.5	3,829,601
73R	3,829,600
102R	3,829,602
115	3,829,603
212	3,829,629
525	3,829,604

CLASS 175

45	3,828,867

CLASS 176

78	3,828,868

CLASS 177

50	3,828,869
155	3,828,870

CLASS 178

5.4CD	3,829,605
5.4ST	3,829,607
6.06A	3,829,610
	3,829,612
6.6A	3,829,608
6.8	3,829,609
	3,829,613
	3,829,614
54ST	3,829,607
58R	3,829,606
66A	3,829,610
	3,829,611
	3,829,612
66.06A	3,829,611

CLASS 179

1GQ	3,829,615
2A	3,829,616
7.01R	3,829,617
8A	3,829,618
18ET	3,829,620
18HB	3,829,619
71R	3,829,617
100.1R	3,829,621
100.3V	3,829,622
115.5PV	3,829,623
156R	3,829,624
170G	3,829,625
170R	3,829,626
175.2R	3,829,627
	3,829,628

CLASS 180

1F	3,828,871
5R	3,828,872
9.5	3,828,873
9.6	3,828,874
14A	3,828,875
21	3,828,876
44R	3,828,877
53FE	3,828,878
54A	3,828,879
66R	3,828,880
69C	3,828,885
75	3,828,881
79.2B	3,828,882
79.2R	3,828,883
125	3,828,884

CLASS 181

33R	3,828,888
118	3,828,886
119	3,828,891
126	3,828,887

CLASS 182

107	3,828,889

CLASS 184

15R	3,828,890

CLASS 187

29R	3,828,892

CLASS 188

67	3,828,893
71.8	3,828,894
77R	3,828,895
79.5SC	3,828,896
317	3,828,897
345	3,828,898

CLASS 191

41	3,829,630
66	3,829,631

CLASS 192

.096	3,828,902
12A	3,828,900
12D	3,828,901

CLASS 194

1N	3,828,903
10	3,828,904
	3,828,905
59	3,828,906
72	3,828,907

CLASS 195

1.3	3,829,361
31F	3,829,362
32	3,829,363
41B	3,828,899
41R	3,828,899

CLASS 197

1R	3,828,908
16	3,828,909
98	3,828,910
114R	3,828,911
189	3,828,912

CLASS 198

9	3,828,913
30	3,828,914
88	3,828,915
115	3,828,916
127R	3,828,917
155	3,828,918
160	3,828,919
221	3,828,920
287	3,828,921

CLASS 200

5A	3,829,632
16A	3,829,633
16R	3,829,634
19WG	3,829,635
34	3,829,636
47	3,829,637
61.27	3,829,638
61.47	3,829,639
83N	3,829,640
148A	3,829,641
148R	3,829,642
153SC	3,829,643
153T	3,829,644
157	3,829,645
159B	3,829,646
264	3,829,648
289	3,829,647

CLASS 204

28	3,829,364
67	3,829,365
105R	3,829,366
129.95	3,829,367
149	3,829,368
159.11	3,829,369
180P	3,829,370
181	3,829,371
192	3,829,372
290R	3,829,374
298	3,829,373
299	3,829,375

CLASS 206

1.5	3,828,922
254	3,828,923
343	3,828,924
347	3,828,925
427	3,828,926
511	3,828,927

CLASS 208

89	3,829,376

CLASS 209

74R	3,828,928

CLASS 210

11	3,829,377
18	3,829,379
30	3,829,380
42	3,829,378
70	3,828,929
137	3,828,930
163	3,828,931
169	Re.28,116
	3,828,932
195	3,828,933
457	3,828,934
523	3,828,935

CLASS 211

19	3,828,936
86	3,828,937

CLASS 212

3	3,828,938
8	3,828,939
14	3,828,940
144	3,828,941

CLASS 214

1SW	3,828,942
2.5	3,828,943
6.5	3,828,944
8.5R	3,828,945
17DA	3,828,946
	3,828,947
63	3,828,948
83.26	3,828,949
138R	3,828,950
	3,828,951
140	3,828,952
332	3,828,953
	3,828,954
	3,828,955
392	3,828,954
	3,828,955
510	3,828,956

CLASS 215

9	3,828,957
	3,828,958
	3,828,959
13R	3,828,960
223	3,828,961
321	3,828,962
337	3,828,963

CLASS 219

10.55	3,829,649
10.69	3,829,650
121EM	3,829,651
133	3,829,652
216	3,829,653
367	3,829,656
386	3,829,654
535	3,829,655
	3,829,657

CLASS 220

1.5	3,828,964
	3,828,965
7	3,828,966
23.86	3,828,967
24.5	3,828,968
31S	3,828,969
315	3,828,969

CLASS 221

24	3,828,970
75	3,828,971
197	3,828,972

CLASS 222

1	3,828,973
	3,828,974
70	3,828,975
83.5	3,828,976
95	3,828,977
110	3,828,978
129	3,828,979
137	3,828,980
153	3,828,981
	3,828,982
190	3,828,983
196	3,828,984
207	3,828,985
375	3,828,986
386	3,828,987
389	3,828,988

CLASS 223

7	3,829,009
37	3,828,989

CLASS 224

2C	3,828,990
5V	3,828,991
9	3,828,992
42.1F	3,828,993
42.46B	3,828,994

CLASS 225

94	3,828,995

CLASS 226

168	3,828,996
172	3,828,997
192	3,828,998

CLASS 229

1.5C	3,828,999
14BA	3,829,000
15	3,829,001
16A	3,829,002
31R	3,829,003
33	3,829,004
39R	3,829,005
51TS	3,829,006
55	3,829,007
87R	3,829,008

CLASS 233

7	3,829,009

CLASS 235

6	3,828,465
61NV	3,829,658
61TB	3,829,661
61.07B	3,829,661
61.12R	3,829,662
61.5S	3,829,659
61.6A	3,829,660
64.3	3,829,663
92SH	3,829,664
150.3	3,829,665
151.21	3,829,667
	3,829,669
151.3	3,829,666
152	3,829,670
153AE	3,829,668
158	3,829,671
	3,829,672
164	3,829,673
181	3,829,674

CLASS 236

49	3,829,010
82	3,829,011

CLASS 237

8R	3,829,012

CLASS 239

14	3,829,013
86	3,829,014
102	3,829,015
127	3,829,016
135	3,829,017
242	3,829,018
251	3,829,019
265.13	3,829,020
265.35	3,829,021
288.5	3,829,022
310	3,829,024
318	3,829,023
373	3,829,025
394	3,829,026
410	3,829,027

CLASS 240

1LP	3,829,675
10.6CH	3,829,676
51.11R	3,829,677
52R	3,829,678
	3,829,679
106	3,829,680
110	3,829,681

CLASS 241

1	3,829,028
19	3,829,029
89.1	3,829,030
182	3,829,031
197	3,829,032

CLASS 242

55.19A	3,829,033
68.3	3,829,034
71.7	3,829,035
110.1	3,829,036
158.2	3,829,037
190	3,829,038
192	3,829,039
199	3,829,040
218	3,829,041

CLASS 243

3	3,829,042

CLASS 244

3.16	3,829,047
12R	3,829,043
13	3,829,044
64	3,828,802
152	3,829,045
	3,829,046

CLASS 245

1	3,829,048

CLASS 246

125	3,829,682

CLASS 248

188.7	3,829,049
223	3,829,050
238	3,829,051
317	3,829,052
354S	3,829,053
490	3,829,054

CLASS 249

91	3,829,055
121	3,829,056
175	3,829,057

CLASS 250

209	3,829,683
213R	3,829,684
256	3,829,685
261	3,829,686
269	3,829,687
272	3,829,688
290	3,829,689
302	3,829,690
311	3,829,691
330	3,829,692
338	3,829,693
339	3,829,694
358	3,829,695
365	3,829,696
370	3,829,697
468	3,829,698
475	3,829,699
483	3,829,700
511	3,829,701
557	3,829,702
571	3,829,702

CLASS 251

25	3,829,058
26	3,829,059
129	3,829,060

328 3,829,061
332 3,829,062

CLASS 252

33.4 3,829,381
62.3R 3,829,382
89 3,829,383
3,829,384
95 3,829,385
135 3,829,386
156 3,829,367
3,829,387
180 3,829,388
182 3,829,389
188PG 3,829,390
188 3,829,390
301.4R 3,829,391
430 3,829,392
459 3,829,393

CLASS 254

2R 3,829,063
166 3,829,064
190C 3,829,065

CLASS 259

3 3,829,066
192 3,829,067

CLASS 260

4AR 3,829,394
22A 3,829,395
22R 3,829,395
23XA 3,829,396
31.8M 3,829,397
31.8R 3,829,398
32.6NT 3,829,399
37N 3,829,400
38 3,829,401
42.13 3,829,402
45.8SN 3,829,404
45.95D 3,829,405
47C 3,829,406
62A 3,829,509
77.5R 3,829,407
88.02S 3,829,408
88.25 3,829,408
94.2M 3,829,409
158 3,829,410
3,829,411
209R 3,829,412
209 3,829,412
210R 3,829,413
231A 3,829,415
239B 3,829,414
239.3P 3,829,417
239.55R 3,829,416
240G 3,829,418
244R 3,829,419
3,829,421
244 3,829,419
251QB 3,829,420
251R 3,829,422
258 3,829,533
267 3,829,423
290P 3,829,428
3,829,429
293.54 3,829,427
293.56 3,829,434
293.79 3,829,433
294.8A 3,829,431
294.8C 3,829,425
294.8F 3,829,430
295.5R 3,829,432
297Z 3,829,426
306.8F 3,829,435
326.11R 3,829,436
326.11 3,829,436
327M 3,829,437
327S 3,829,438
328 3,829,439
335 3,829,440
340.3 3,829,441
340.5 3,829,442
343.2R 3,829,443
3,829,445
343.3 3,829,446
343.5 3,829,447
343.6 3,829,448
345.9 3,829,449
346.3 3,829,444
3,829,450
346.4 3,829,451
351 3,829,453
372 3,829,452
448.2B 3,829,455
453PH 3,829,458
453P 3,829,460
453R 3,829,459
459 3,829,457
463 3,829,456
465D 3,829,461
465E 3,829,454
468H Re.28,110
471C 3,829,463
3,829,464
471R 3,829,462
473R 3,829,465
481R 3,829,466
501.16 3,829,467
502R 3,829,468
512R 3,829,470
513B 3,829,472
513R 3,829,471
515A 3,829,473
515R 3,829,474
520 3,829,475
533N 3,829,476
539A 3,829,478
539R 3,829,477
543P 3,829,479
3,829,480
544C 3,829,482
544Y 3,829,481
3,829,483
545R 3,829,484
552R 3,829,485
554 3,829,486
556AR 3,829,487
558S 3,829,488
559B 3,829,489
563D 3,829,490
566B 3,829,492
566F 3,829,491
570.5C 3,829,469
584C 3,829,494
584R 3,829,493
586R 3,829,495
590 3,829,496
3,829,497
3,829,498
597A 3,829,499
607A 3,829,500
609D 3,829,501
610R 3,829,502
3,829,503
611A 3,829,504
611B 3,829,505
611 3,829,504
615B 3,829,506
3,829,508
615R 3,829,507
621A 3,829,509
632C 3,829,510
653.1T 3,829,511
653.5 3,829,513
653.6 3,829,512
668R 3,829,514
3,829,515
3,829,516
3,829,517
670 3,829,518
672R 3,829,519
677A 3,829,520
3,829,521
677 3,829,520
678 3,829,522
683D 3,829,523
683.3 3,829,524
683.63 3,829,525
755 3,829,526
827 3,829,527
3,829,529
841 3,829,528
850 3,829,530
858 3,829,533
859R 3,829,531
859 3,829,531
864 3,829,532
970 3,829,534
979 3,829,535

CLASS 261

36R 3,829,068
44R 3,829,069
77 3,829,070
89 3,829,071

CLASS 264

1 3,829,536
3R 3,829,537
8 3,829,538
13 3,829,539
34 3,829,540
44 3,829,403
65 3,829,541
71 3,829,542
78 3,829,543
125 3,829,544
174 3,829,545
262 3,829,546
297 3,829,547
328 3,829,548

CLASS 266

23H 3,829,072
41 3,829,073

CLASS 267

130 3,829,074
136 3,829,074

CLASS 269

28 3,829,075
57 3,829,076
107 3,829,077
310 3,829,078
328 3,829,079

CLASS 270

61F 3,829,080
66 3,829,081

CLASS 271

4 3,829,082
3,829,083
231 3,829,085
277 3,829,084

CLASS 272

85 3,829,086

CLASS 273

1M 3,829,088
1R 3,829,087
44 3,829,089
54B 3,829,090
67R 3,829,091
77A 3,829,092
95A 3,829,093
95R 3,829,094
101.1 3,829,095
110 3,829,096
125R 3,829,097
131AB 3,829,098
131KC 3,829,099
157R 3,829,100
160 3,829,101
186A 3,829,102

CLASS 277

29 3,829,104
74 3,829,103
183 3,829,105
205 3,829,106
207 3,829,107

CLASS 279

1L 3,829,108
91 3,829,109

CLASS 280

8 3,829,110
11.3 3,829,111
11.35C 3,829,112
30 3,829,113
33.99R 3,829,114
34A 3,829,115
43.23 3,829,116
96.1 3,829,117
106.5R 3,829,118
124B 3,829,120
124F 3,829,119
150AB 3,829,124
150SB 3,829,123
150B 3,829,122
150C 3,829,121
204 3,829,125
240 3,829,126
259 3,829,127
461A 3,829,128
476R 3,829,129
479 3,829,130
493 3,829,131

CLASS 281

31 3,829,132

CLASS 283

6 3,829,133

CLASS 285

14 3,829,134
55 3,829,135
383 3,829,136

CLASS 292

171 3,829,137
254 3,829,138
349 3,829,139

CLASS 293

15 3,829,140
71P 3,829,141
71R 3,829,141
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31.2 3,829,143
74 3,829,144
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28 3,829,164
59 3,829,165

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21BE 3,829,168
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3,829,709
205 3,829,710
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225C 3,829,712
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3,829,714
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47 3,829,721
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54 3,829,723
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3,829,730
3,829,731
176 3,829,731
198 3,829,732
205 3,829,733
217 3,829,734
399 3,829,727

CLASS 315

105 Re.28,114
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8 3,829,745
33SC 3,829,736
81 3,829,737
98 3,829,739
100 3,829,740
101DH 3,829,741
103 3,829,742
244 3,829,744
261 3,829,738

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175 3,829,747
257 3,829,748
331 3,829,749
561 3,829,750
645 3,829,751
654 3,829,752

CLASS 320

6 3,829,753

CLASS 321

2 3,829,754
3,829,755
4 3,829,756
18 3,829,757

CLASS 322

28 3,829,758

CLASS 323

119 3,829,759

CLASS 324

.5Q 3,829,760
30B 3,829,761
37 3,829,762
43R 3,829,768
51Y 3,829,763
51 3,829,763
58R 3,829,764
67 3,829,765
77R 3,829,766
79D 3,829,769
95 3,829,770
96 3,829,771
113 3,829,772
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122 3,829,776

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186 3,829,782

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147 3,829,786

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94.5 3,829,791
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17F 3,829,817
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146.3AQ 3,829,831
146.3P 3,829,832
149R 3,829,833
3,829,834
151 3,829,835
171R 3,829,836
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173AM 3,829,846
173LT 3,829,847
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258C 3,829,850
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347NT 3,829,852
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7A 3,829,858
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773 3,829,863
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203 3,829,222
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73 3,829,892
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121 3,829,895
125 3,829,896
133 3,829,897
137 3,829,898

CLASS 401		197	3,829,238	**CLASS 418**		57	3,829,562	329	3,829,586	350	3,829,587
130	3,829,224			5	3,829,256	70	3,829,563			354	3,829,588
CLASS 402		**CLASS 416**		36	3,829,257	78	3,829,564	**CLASS 425**		427	3,829,589
17	3,829,225	134	3,829,239	61B	3,829,258	131	3,829,566	78	3,829,261	478	3,829,590
CLASS 403		223	3,829,240	121	3,829,259	180	3,829,567	126S	3,829,262	485	3,829,591
295	3,829,226	**CLASS 417**		178	3,829,260	203	3,829,568	126.5	3,829,262	491	3,829,592
377	3,829,227	17	3,829,241	**CLASS 423**		217	3,829,565	145	3,829,263	496	3,829,593
CLASS 404		38	3,829,242	43	3,829,549	232	3,829,569	149	3,829,264	516	3,829,594
68	3,829,228	50	3,829,243	54	3,829,550	241	3,829,570	161	3,829,265	**CLASS 431**	
69	3,829,229	53	3,829,244	210	3,829,551	250	3,829,571	192	3,829,266	4	3,829,275
CLASS 408		108	3,829,245	255	3,829,552		3,829,572	237	3,829,267	14	3,829,276
14	3,829,230	121	3,829,246	279	3,829,553		3,829,573	262	3,829,268	109	3,829,277
108	3,829,231	182	3,829,247	300	3,829,554	258	3,829,574	308	3,829,269	227	3,829,278
CLASS 415		410	3,829,248	347	3,829,555	263	3,829,424	381.2	3,829,270	354	3,829,279
1	3,829,232	411	3,829,249	409	3,829,556		3,829,575	385	3,829,271	**CLASS 432**	
110	3,829,233	424	3,829,250	478	3,829,557	271	3,829,576	430	3,829,272	58	3,829,280
138	3,829,234	477	3,829,251	481	3,829,558	278	3,829,577	444	3,829,273	63	3,829,281
143	3,829,235	482	3,829,252	497	3,829,559		3,829,585	466	3,829,274	80	3,829,282
156	3,829,236	504	3,829,253	522	3,829,560	283	3,829,578	**CLASS 426**		103	3,829,283
181	3,829,237	517	3,829,254	**CLASS 424**		312	3,829,579	65	3,829,582	183	3,829,284
		559	3,829,255	44	3,829,561	320	3,829,580	175	3,829,583	223	3,829,285
						327	3,829,581	231	3,829,584		

CLASSIFICATION OF DESIGNS

D01—	99	232,330			232,341		214	232,352	D26—	14A	232,363	D40—	5	232,374			232,385
D06—	62	232,331		74	232,342	D13—	1A	232,354			232,365	D45—	10C	232,375	D72—	R	232,386
	71	232,332		164	232,343		J	232,353		G	232,364	D48—	31	232,376	D74—	9	232,387
	139	232,333		184	232,344	D16—	R	232,355	D29—	1B	232,366	D49—	10	232,377	D83—	1.5	232,388
	140	232,334	D08—	183	232,345	D22—	12	232,356	D34—	5GH	232,371	D52—	2C	232,378		12R	232,389
	181	232,335		188	232,346		23	232,357		PC	232,367	D57—	1D	232,379	D86—	10J	232,390
D07—	1	232,336	D09—	1	232,347		31	232,358		PP	232,369		F	232,380			232,391
	20	232,337		192	232,348	D23—	6	232,359		K	232,368	D61—	Q	232,381			232,392
	27	232,396	D10—	70	232,349		19	232,360			232,370	D64—	12B	232,382	D87—	1D	232,393
	47	232,338	D12—	15	232,350		139	232,361		14D	232,372	D70—	1	232,383			232,394
	70	232,339		156	232,351		165	232,362		15JJ	232,373			232,384	D95—	3A	232,395
	71	232,340															

CLASSIFICATION OF PLANTS

P. —	43	3,589	P. —		3,590	P. —	70	3,591	P. —	72	3,592	P. —	78	3,587	P. —		3,588

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1	3,829,145	3,828,786	3,829,470		3,829,896	3,828,513	3,828,767
	3,829,547	3,828,809	3,829,486	9	Re.28,109	3,828,514	3,828,771
2	3,828,895	3,828,822	3,829,489		3,828,372	3,828,534	3,828,773
4	3,828,836	3,828,858	3,829,499		3,828,401	3,828,536	3,828,778
	3,829,246	3,828,884	3,829,510		3,828,613	3,828,581	3,828,782
	3,829,418	3,828,931	3,829,523		3,828,634	3,828,601	3,828,784
	3,829,755	3,828,937	3,829,549		3,828,729	3,828,659	3,828,793
	3,829,818	3,828,940	3,829,552		3,828,810	3,828,714	3,828,794
5	3,828,436	3,828,945	3,829,558		3,828,925	3,828,723	3,828,802
	3,828,463	3,828,965	3,829,566		3,828,929	3,828,734	3,828,802
	3,829,154	3,828,981	3,829,582		3,828,969	3,828,806	3,828,811
6	3,828,379	3,828,983	3,829,622		3,828,969	3,828,821	3,828,819
	3,828,380	3,828,993	3,829,659		3,829,005	3,828,867	3,828,840
	3,828,383	3,829,025	3,829,674		3,829,014	3,828,921	3,828,860
	3,828,390	3,829,043	3,829,676		3,829,027	3,828,933	3,828,873
	3,828,403	3,829,046	3,829,678		3,829,052	3,828,989	3,828,897
	3,828,431	3,829,059	3,829,680		3,829,058	3,829,081	3,828,907
	3,828,441	3,829,061	3,829,696		3,829,071	3,829,087	3,828,918
	3,828,457	3,829,094	3,829,700		3,829,091	3,829,133	3,828,924
	3,828,470	3,829,099	3,829,713		3,829,096	3,829,153	3,828,948
	3,828,473	3,829,102	3,829,716		3,829,125	3,829,490	3,828,959
	3,828,478	3,829,107	3,829,745		3,829,196	3,829,559	3,828,963
	3,828,490	3,829,110	3,829,745		3,829,239	3,829,596	3,828,977
	3,828,512	3,829,112	3,829,775		3,829,250	3,829,625	3,828,982
	3,828,519	3,829,116	3,829,780		3,829,362	3,829,673	3,828,988
	3,828,566	3,829,134	3,829,781		3,829,434	3,829,699	3,829,018
	3,828,577	3,829,135	3,829,795		3,829,444	3,829,788	3,829,022
	3,828,609	3,829,170	3,829,797		3,829,446	13 3,828,397	3,829,077
	3,828,610	3,829,171	3,829,798		3,829,455	3,829,036	3,829,088
	3,828,611	3,829,185	3,829,834		3,829,600	3,829,044	3,829,092
	3,828,615	3,829,192	3,829,839		3,829,607	15 3,828,696	3,829,106
	3,828,632	3,829,194	3,829,851		3,829,607	16 3,828,992	3,829,121
	3,828,632	3,829,199	3,829,862		3,829,658	17 Re.28,111	3,829,172
	3,828,655	3,829,202	3,829,889		3,829,666	3,828,369	3,829,173
	3,828,664	3,829,215	3,829,890		3,829,690	3,828,369	3,829,182
	3,828,678	3,829,216	3,829,893		3,829,691	3,828,442	3,829,207
	3,828,687	3,829,230	3,829,897		3,829,693	3,828,462	3,829,242
	3,828,688	3,829,244	8 3,828,486		3,829,720	3,828,467	3,829,274
	3,828,697	3,829,297	3,828,498		3,829,778	3,828,487	3,829,276
	3,828,697	3,829,307	3,828,501		3,829,842	3,828,528	3,829,283
	3,828,701	3,829,308	3,828,506		3,829,847	3,828,565	3,829,299
	3,828,708	3,829,327	3,828,758	10	3,828,607	3,828,604	3,829,314
	3,828,712	3,829,331	3,828,780		3,828,839	3,828,604	3,829,450
	3,828,720	3,829,335	3,828,804		3,829,429	3,828,616	3,829,518
	3,828,732	3,829,336	3,828,899		3,829,581	3,828,622	3,829,548
	3,828,733	3,829,377	3,828,899	11	3,828,887	3,828,643	3,829,551
	3,828,742	3,829,392	3,829,055		3,828,936	3,828,660	3,829,584
	3,828,765	3,829,403	3,829,151		3,829,859	3,828,670	3,829,597
	3,828,769	3,829,425	3,829,190	12	3,828,443	3,828,706	3,829,617
	3,828,779	3,829,430	3,829,550		3,828,456	3,828,727	3,829,617
	3,828,781	3,829,465	3,829,618		3,828,460	3,828,750	3,829,628

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19 3,828,475
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3,828,573	3,829,291	3,829,825	3,828,683	3,828,845	3,828,776
3,828,595	3,829,354	3,829,833	3,828,702	3,828,879	3,828,916
3,828,674	3,829,376	3,829,869	3,828,711	3,828,943	3,829,030
3,828,680	3,829,419	3,829,883	3,828,868	3,829,020	3,829,066
3,828,764	3,829,419 49	3,828,535	3,828,966	3,829,070	3,829,180
3,828,850	3,829,494	3,828,789	3,829,086	3,829,278	3,829,189
3,828,852	3,829,507	3,829,143	3,829,164	54 3,828,377	3,829,279
3,828,854	3,829,553	3,829,544	3,829,237	3,828,494	3,829,285
3,828,869	3,829,598 50	3,828,587	3,829,358	55 3,828,450	3,829,357
3,828,874	3,829,653	3,828,841	3,829,849	3,828,525	3,829,412
3,828,891	3,829,686 51	3,828,404	53 3,828,374	3,828,636	3,829,412
3,828,978	3,829,687	3,828,417	3,828,422	3,828,671	3,829,645
3,829,010	3,829,692	3,828,438	3,828,606	3,828,671	3,829,681
3,829,131	3,829,776	3,828,500	3,828,606	3,828,753	3,829,754
3,829,240	3,829,814	3,828,518	3,828,718	3,828,753	3,829,835
3,829,275	3,829,816	3,828,524			

DESIGN PATENTS

6	232,352	12	232,369	232,377	29	232,360	232,384	42	232,379
	232,353	17	232,331	20 232,358	31	232,350	232,385		232,395
	232,354		232,332	232,378	32	232,367	232,394	44	232,333
	232,368		232,348	232,388	34	232,330	36 232,340		232,337
	232,371		232,349	25 232,336		232,334	232,343	49	232,357
	232,381		232,375	232,370		232,335	232,361		232,386
	232,396		232,393	232,372		232,345	232,374	53	232,344
9	232,365	18	232,366	232,380		232,373	37 232,376		232,362
	232,387	19	232,356	26 232,359		232,383	40 232,339	55	232,347

PLANT PATENTS

6	3,589	3,590	17	3,587		

U. S. GOVERNMENT PRINTING OFFICE : O - 1974

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*